



31761117087106



Digitized by the Internet Archive  
in 2023 with funding from  
University of Toronto

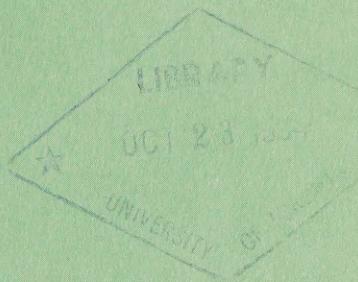
<https://archive.org/details/31761117087106>







15



## OCEAN WEATHER STATION "P" NORTH PACIFIC OCEAN

b69c  
No. 15 -18  
1964 Data Record Series

1964 15-18

### Canadian Oceanographic Data Centre

Programmed by the  
Canadian Committee on Oceanography

1964

GC

1

C 35

1964

no. 15-18



1025201

ROGER DUHAMEL, F. R. S. C.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1964  
Cat. No. M58-1/1964-15

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

OCEAN WEATHER STATION "P" NORTH PACIFIC OCEAN

(C O D C Reference: 02-63-006)

No. 15

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography



FISHERIES RESEARCH BOARD OF CANADA

Ocean Weather Station "P" North Pacific Ocean

Ships: C. C. G. S. "St. Catharines" and C. C. G. S. "Stonetown"  
Local Cruise  
designations: P-63-5 Patrol No. 59  
Cruise periods: Dec. 4, 1963-Jan. 15, 1964 Jan. 14-Feb. 24, 1964  
Observer: Mr. R. B. Tripp.

PACIFIC OCEANOGRAPHIC GROUP - Nanaimo, B.C.



## **SECTION I**

**Description of data collection procedures**



Figure 1.

The Canadian Weathership C.C.G.S. "St. Catharines".

( D.O.T. Photo )

The oceanographic winch is located on the starboard side of the signal deck, just aft of the bridge wing.







Figure 2.

The Canadian Weathership C.C.G.S. "Stonetown".

( D.O.T. Photo )

Bathythermograph soundings boom can be seen below the bridge on the signal deck.



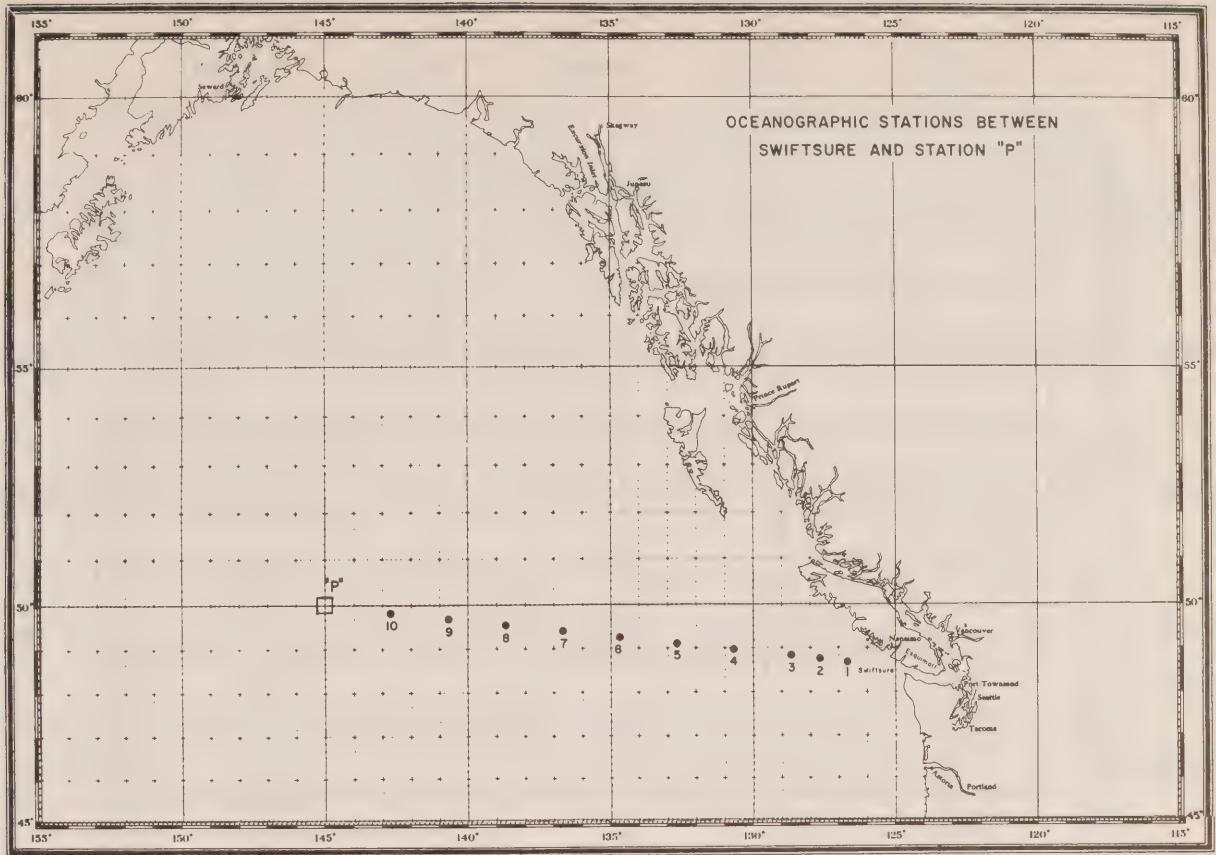


Figure 3. Locations of oceanographic stations observed between Swiftsure Bank and Ocean Weather Station "P".

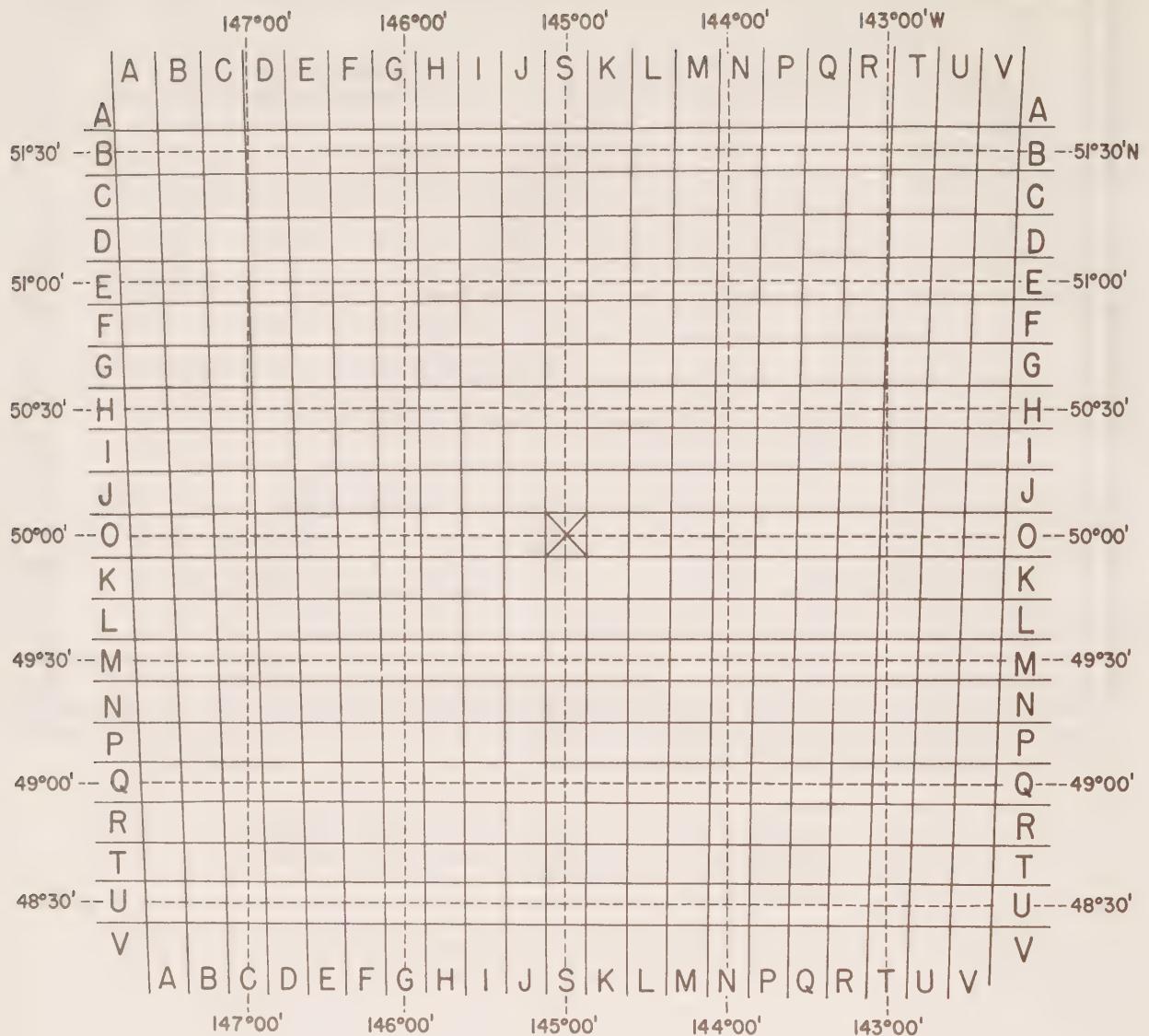


Figure 4.

Position-indicating grid for Ocean Weather Station "P", with mercator projection of a latitude and longitude grid superimposed.

## INTRODUCTION

Canadian operation of Ocean Weather Station "P" (latitude 50°00'N, longitude 145°00'W) was inaugurated in December 1950. The Station is manned by two vessels of the Canadian naval frigate class operated by the Marine Services of the Department of Transport. They are the C. C. G. S. "St. Catharines" and the C. C. G. S. "Stonetown" (Fig. 1 and 2) (Atlantic Oceanographic Group, MS, 1961). Each ship remains on Station for a period of 6 weeks, and is then relieved by the alternate ship, thus maintaining a continuous watch. The chief purpose of the Station is to operate as a meteorological station for surface and upper-air observations, and as an air-sea rescue station.

Twice-daily bathythermograph observations have been made at Station "P" by the Pacific Oceanographic Group since July 1952. A program of more extensive oceanographic observations at Station "P" was commenced in August 1956. This was further extended in April 1959 by the addition of a series of ten oceanographic stations along the route to and from Station "P" and Swiftsure Bank (Fig. 3).

The C. C. G. S. "St. Catharines" is equipped with deck and laboratory facilities required to make oceanographic observations. Oceanographers from the Pacific Oceanographic Group accompany the ship on each patrol. The C. C. G. S. "Stonetown" is equipped with bathythermograph sounding equipment only. BT observations are made by members of the ship's crew.

CRUISE LOG, C. C. G. S. "ST. CATHARINES", SURVEY P-63-5

December 4: ship departed Esquimalt, B. C. for Ocean Weather Station "P"; observed 4 oceanographic stations enroute.

December 6: relieved C. C. G. S. "Stonetown", and commenced normal patrol routine.

December 20: oceanographic operations were interrupted frequently during the next 15 days because of strong winds, sometimes reaching force 10.

January 13: relieved by C. C. G. S. "Stonetown", and proceeded on return trip to base; 5 oceanographic stations observed enroute to Swiftsure Bank.

January 16: berthed at Esquimalt, B. C.

Ten oceanographic stations were observed at Ocean Weather Station "P" - 5 to 400 m, 1 to 1500 m, 1 to 2000 m, and 3 to 4200 m. Dissolved oxygen determinations were made on the samples collected at Station "P". BT casts to 275 m depth were made at all oceanographic stations, and twice-daily at 0200 and 1700 G. M. T. Surface salinity samples were collected at the 0200 cast.

Vertical plankton hauls from 150 m depth were made on 12 days at Station "P". Two plankton hauls from 1200 m were also made. Surface horizontal plankton tows were made on 8 days. Ocean productivity measurements of photosynthesis ( $C_{14}$  method) and plant pigment concentrations were made at the surface on 12 days, and to 50 m depth on 2 days. BT observations to 135 m for the OCEAN series (Giovando, MS, 1962) were made on 12 days.

CRUISE LOG, C. C. G. S. "STONETOWN", PATROL NO. 59

January 10: departed Esquimalt for Ocean Weather Station "P", no BT observations enroute.

January 13: relieved C. C. G. S. "St. Catharines" and commenced routine twice-daily BT observations at 0200 and 1700 G. M. T.

February 13: BT observations discontinued for 3 days because of adverse weather conditions.

February 24: relieved by C. C. G. S. "St. Catharines" and returned to base; no BT observations made.

Fifty-six BT casts to 275 m depth were made during the patrol. OCEAN series observations to 135 m were made on 24 days.

### OBSERVATION PROCEDURES

1. Samples at depth were obtained with Nansen reversing water samplers. Shallow stations to 400 m were observed in one cast. The deep stations were observed in two casts; the first to 400 m, and the second from 500 m to the deepest sampling depth.

2. Temperatures at depth were measured by German or Japanese reversing thermometers. All samplers were equipped with two protected reversing thermometers except those at 75 m, and latterly, at 30 m depth. An unprotected thermometer was used on all samplers from 200 m to the deepest observed depth.

3. Surface samples (0 metres) for salinity and dissolved oxygen determinations were obtained in a one-gallon bucket. The surface temperature was measured in this sample with an armoured thermometer graduated in 0.5C° intervals.

4. Water transparency observations were made with a white secchi disc of 30 cm diameter.

5. Station locations were determined by officers of the watch, who also made the meteorological observations reported in the data record headings.

### LABORATORY PROCEDURES

The salinity determinations of the oceanographic station samples collected during Survey P-63-5 were made on an inductive salinometer, Model 601 MK III, manufactured by Auto-Lab Industries Pty. Ltd., Sydney, Australia (Brown and Hamon, 1961). The samples were analysed on board ship, within 2 to 10 days after their collection. The salinity data are the means of duplicate determinations whose "conductivity ratio" values fell within an acceptable range. The accuracy of the determinations at the 35‰ salinity level is stated to be ±0.003‰ (Brown and Hamon, 1961). The 0200 surface salinity samples collected during the "Stonetown" Patrol No. 59 were analysed in the shore laboratory using the MK III conductivity salinometer (Strickland, MS, 1958).

The dissolved oxygen analyses were done in the shipboard laboratory by a modified Winkler method (Strickland and Parsons, 1960).

The ocean productivity measurements were made according to the methods described by Strickland (1960). Results will be reported later in a publication of the Fisheries Research Board.

### BATHYTHERMOGRAPH DATA

The BT traces have been drawn on standard pre-printed graphs resembling BT calibration grides of several depth ranges. The slides were positioned on the appropriate calibration grid in an adjustable holder. All BT traces were aligned using a corrected temperature value obtained from a thermograph recording of the engine-room intake temperature. The top of the trace was always aligned with the zero-depth grid line.

The bathythermograms are arranged in a chronological order in each of two sections for each ship; the first presenting the 275 m casts, and the second the 135 m casts in the OCEAN series. The date-time and location information are noted below each bathythermogram, using the C.O.D.C. coding system. Those BT observations made at an oceanographic station are identified by an asterisk (\*) preceding the date-time group. Only one of the 8 slides in each day's OCEAN group is reproduced as a bathythermogram. This slide was chosen as being representative of the group. The position co-ordinates are those of the last slide in the group.

### SURFACE SALINITY DATA

These are presented in a table listing the date, position, and salinity values. The data for the C.C.G.S. "St. Catharines" Survey P-63-5 are considered to have an accuracy of  $\pm 0.003\%$  (Brown and Hamon, 1961). The C.C.G.S. "Stonetown" Patrol No. 59 data are from a single determination, and have an accuracy range of  $\pm 0.009\%$  at the 95% probability level (Strickland, MS, 1958).

### PERSONNEL

The oceanographer on board C.C.G.S. "St. Catharines" for survey P-63-5 was Mr. R. B. Tripp. Assisting in the preparation of the data for presentation were: H. J. Hollister, D. G. Robertson, and J. Wong. The officers and men of the two ships, C.C.G.S. "St. Catharines" and "Stonetown", assisted in making the oceanographic observations and the bathythermograph casts.

## **SECTION II**

**Description of the machine-generated data record**



## INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a standard deviation ( $\sigma$ ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "GENERAL INFORMATION" of section II of the data record.

The measurement error estimate of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e.,  $1\sigma = A$ ,  $2\sigma = B$ , etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O<sub>2</sub>) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement ( $\sigma$ ) under normal routine field conditions by:

CANADIAN OCEANOGRAPHIC DATA CENTRE

$$\frac{\sigma_i}{\sigma} = \left\{ \left( \frac{\Delta V_i}{\sigma^2} \right)^2 + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left( \frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2} , \text{ where}$$

$\sigma_i$  = Standard deviation of the combined error estimates at standard oceanographic depth,  
 $\Delta V_i$  = the interpolation error estimate of variable "V" at standard oceanographic depth =  $^{1/3} (V_{i_1} - V_{i_2})$   
 $\gamma$  = Interpolation polynomial coefficient.  
 $Z_j$  = Observed depth.  
 $Z_i$  = Standard oceanographic depth, such that:  $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction  $\frac{\sigma}{\sigma}$ , if  $\geq 2$ , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.).

With respect to the interpolated value of the salinity variable if reported to three decimal digits, the **interpolation error estimate** is given only when  $\frac{\sigma}{\sigma} \geq 2$  (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

## EXPLANATION OF DATA RECORD HEADINGS

### MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE NUMBER: Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE NUMBER: Indicates the chronological order in which the stations were occupied.

(3) LATITUDE: Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.  
It is reported to tenths of hours (Table 1).  
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).  
00 m - 50 m = 00  
51 m - 150 m = 01  
151 m - 250 m = 02  
etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).

(14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;

NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.

(15) WAVES 1  
( $d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2  
( $d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.

(18) WIND FORCE  
(WND-FCE): Beaufort Notation (See Table 6).

WIND SPEED  
(WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.

(19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

(20) AIR TEMPERATURE: In degrees Celsius.

(21) WET BULB: In degrees Celsius.

(22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677

(23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.

(24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700

(25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.

(26) STATION: A station reference number, assigned by the institute prior to, or during the survey.

(27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO <sub>4</sub>	(9) -P-	(10) NO <sub>2</sub>	(11) NO <sub>3</sub>	(12) SiO <sub>3</sub>
					(13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.

(3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section.  
An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) SALINITY: Salinity as defined by:  $S = 0.03 + 1.805 C\% \text{ , reported in:}$   
a. 1/100 parts per 1000, or  
b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)  
In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.  
An alphabetical character following the value is the measurement error estimate as referred to under (3). Explanation of "Q" see p. 27

(6) SIGMA-T: The specific gravity anomaly as defined by: (Specific gravity - 1) X 10<sup>3</sup> (e.g.,  $\sigma_t$  reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO <sub>4</sub>	Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO <sub>2</sub>	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre - No dissolved nitrogen included -
(11) NO <sub>3</sub>	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO <sub>2</sub>	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

#### INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

(1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "INTRODUCTION" to section II of the data record).

(3) SALINITY:

- A. The reported salinity values are observed to three decimal places.
  - (i) the interpolation error estimate is less than twice the standard deviation of measurement
    - the interpolated value is reported to three decimal places (e.g., 30.139).
  - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
    - the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).
- B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
  - the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P \delta dp$$

$\Delta D$  is expressed in dynamic metres ( $10^5$  ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL ENERGY ANOMALY: The Potential energy anomaly  $\chi$  as defined by:

$$\chi = 1/g \int_0^P p \delta dp = \int_0^Z \rho p \delta dz$$

$\chi$  is expressed in units of  $10^6$  ergs/cm<sup>2</sup> and recorded to two decimal places (e.g., 116.44).

(9) SPECIFIC VOLUME ANOMALY: The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35.0.P}$$

$\delta$  is expressed in ml/gr, and conventionally reported as  $10^5 \delta$ , to one decimal place (i.e.,  $\delta$  reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

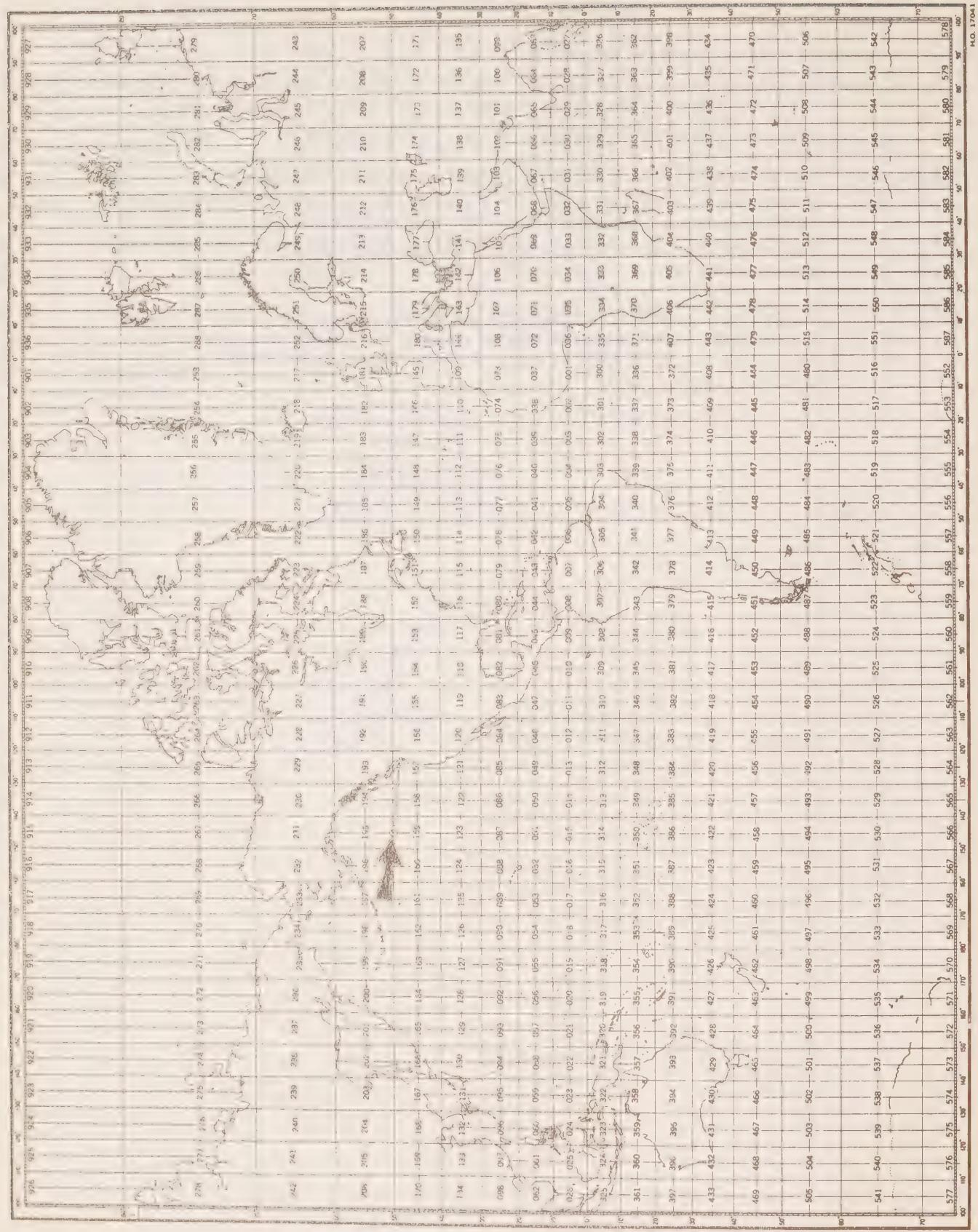
## SPECIAL CHARACTERS

\* (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs

\* (Asterisk): this character may occur in the interpolated portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one observed depth interval. The third, and all consequent levels within that interval are preceded by the asterisk to indicate that more than two machine interpolations were carried out, utilizing the same set of interpolation parabolas.

Q: appears occasionally in this data record, preceding an observed oxygen value. This "questionable" indicator infers that the value does not fit the usual pattern of oxygen distribution. It could be due to a sampling error and generally not a determination methods error.

## MARSDEN SQUARE CHART



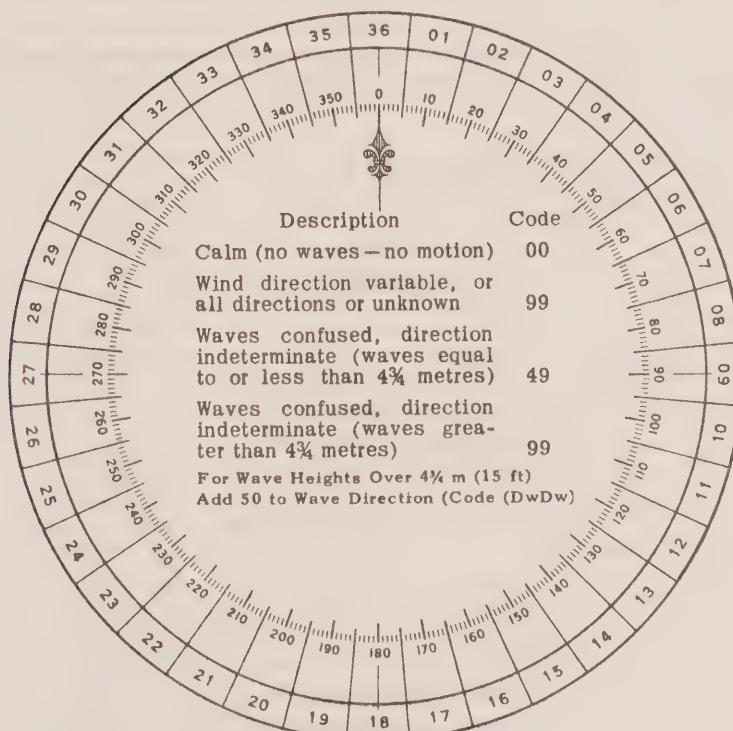
**Table 1**  
**CONVERSION**  
**MINUTES TO  $\frac{1}{10}$  HRS.**

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

**Table 2**  
**WATER COLOR CODE**  
**Based on Percentage Yellow**

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

**Table 3. DIRECTION CODE (dd)**



**NOTE:**

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

**Table 4. PERIOD OF THE WAVES ( $P_w$ )**  
 (Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

**Table 5. HEIGHT OF THE WAVES ( $H_w$ )**

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 =  $\frac{1}{4}$  m (1 ft) to  $\frac{3}{4}$  m (2½ ft); 5 =  $2\frac{1}{4}$  m (7 ft) to  $2\frac{3}{4}$  m (9 ft); 9 =  $4\frac{1}{4}$  m (13½ ft) to  $4\frac{3}{4}$  m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of  $2\frac{3}{4}$  m is reported by code figure 5.

Code	Code
0 Less than $\frac{1}{4}$ m (1 ft)	0 5 m (16 ft)
1 $\frac{1}{2}$ m (1½ ft)	1 $5\frac{1}{2}$ m (17½ ft)
2 1 m (3 ft)	2 6 m (19 ft)
3 $1\frac{1}{2}$ m (5 ft)	Add 3 $6\frac{1}{2}$ m (21 ft)
4 2 m (6½ ft)	50 4 7 m (22½ ft)
5 $2\frac{1}{2}$ m (8 ft)	to 5 $7\frac{1}{2}$ m (24 ft)
6 3 m (9½ ft)	Dw Dw 6 8 m (25½ ft)
7 $3\frac{1}{2}$ m (11 ft)	7 8½ m (27 ft)
8 4 m (13 ft)	8 9 m (29 ft)
9 $4\frac{1}{2}$ m (14 ft)	9 $9\frac{1}{2}$ m (30½ ft) or more
x Height not determined	

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER  
W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

No meters except photometers	Code figure ww	
	00	Cloud development not observed or not observable
	01	Clouds generally dissolving or becoming less developed
	02	State of sky on the whole unchanged
	03	Clouds generally forming or developing
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
	05	Haze
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour
	10	Mist
	11	Patches of shallow fog or ice fog at the station, whether on land or sea, not continuous
	12	More or less deeper than about 2 metres on land or 10 metres at sea
	13	Lightning visible, no thunder heard
	14	Precipitation within sight, not reaching the ground or the surface of the sea
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station
	17	Thunderstorm, but no precipitation at the time of observation
	18	Squalls at or within sight of the station during the preceding hour
	19	Funnel clouds or at the time of observation

characteristic change of the state of sky during the past hour	ww = 20 - 29	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation
	20	Drizzle (not freezing) or snow grains
	21	Rain (not freezing)
	22	Snow
	23	Rain and snow or ice pellets, type (a)
	24	Freezing drizzle or freezing rain
	25	Shower(s) of rain
	26	Shower(s) of snow, or of rain and snow
	27	Shower(s) of hail, or of rain and hail
	28	Fog or ice fog
	29	Thunderstorm (with or without precipitation)
	ww = 30 - 39	Duststorm, sandstorm, drifting or blowing snow
	30	Slight or moderate dust-storm or sand-storm
	31	Severe dust-storm or sand-storm
	32	- has decreased during the preceding hour
	33	- no appreciable change during the preceding hour
	34	- has begun or has increased during the preceding hour
	35	- has decreased during the preceding hour
	36	Severe dust-storm or sand-storm
	37	- no appreciable change during the preceding hour
	38	- has begun or has increased during the preceding hour
	39	Slight or moderate blowing snow
		generally low (below eye level)
		Heavy drifting snow
		Slight or moderate blowing snow
		generally high (above eye level)
		Heavy blowing snow
	ww = 40 - 49	Fog or ice fog at the time of observation
	40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
	41	Fog or ice fog in patches
	42	Fog or ice fog, sky visible
	43	Fog or ice fog, sky invisible
	44	Fog or ice fog, sky visible
	45	Fog or ice fog, sky invisible
	46	Fog or ice fog, sky visible
	47	Fog or ice fog, sky invisible
	48	Fog, depositing rime, sky visible
	49	Fog, depositing rime, sky invisible

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

## PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

50	Drizzle, not freezing, intermittent	{ slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	{ moderate at time of ob-
53	Drizzle, not freezing, continuous	{ servation
54	Drizzle, not freezing, intermittent	{ heavy (dense) at time of
55	Drizzle, not freezing, continuous	{ observation
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

ww = 60 - 69 Rain

60	Rain, not freezing, intermittent	{ slight at time of observa-
61	Rain, not freezing, continuous	{ tion
62	Rain, not freezing, intermittent	{ moderate at time of ob-
63	Rain, not freezing, continuous	{ servation
64	Rain, not freezing, intermittent	{ heavy at time of observa-
65	Rain, not freezing, continuous	{ tion
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

70 - 79 Solid precipitation not in showers

70	Intermittent fall of snow flakes	{ slight at time of ob-
71	Continuous fall of snow flakes	{ servation
72	Intermittent fall of snow flakes	{ moderate at time of ob-
73	Continuous fall of snow flakes	{ servation
74	Intermittent fall of snow flakes	{ heavy at time of ob-
75	Continuous fall of snow flakes	{ servation
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain	{ - slight
88	or rain and snow mixed	{ - moderate or heavy
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	{ - slight
90		{ - moderate or heavy
91	Slight rain at time of observation	
92	Moderate or heavy rain at time of observation	
93	Slight snow, or rain and snow mixed or hail at time of observation	{ thunderstorm during the preceding hour but not at time of observation
94	Moderate or heavy snow, or rain and snow mixed or hail at time of observation	
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	
96	Thunderstorm, slight or moderate, with hail at time of observation	
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	{ thunderstorm at time of observation
98	Thunderstorm, combined with duststorm or sand-storm at time of observation	
99	Thunderstorm, heavy, with hail at time of observation	

## PRECIPITATION ON STATION AT TIME OF OBSERVATION

**Table 8. CLOUD TYPE CODE**

Code	Cloud Type	Code	Cloud Type
0	Cirrus .....	Cl	Nimbostratus .....
1	Cirrocumulus .....	Cc	Stratocumulus .....
2	Cirrostratus .....	Cs	Stratus .....
3	Altocumulus .....	Ac	Cumulus .....
4	Altostratus .....	As	Cumulonimbus .....
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

**Table 9. CLOUD AMOUNT CODE**

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta =  $\frac{1}{8}$  of the sky covered

**Table 10. VISIBILITY**

Code	Estimate of hor. Visibility	
90	Less than 50 metres	(less than 55 yards)
91	50–200 metres	(approx. 55–220 yards)
92	200–500 metres	(approx. 220–550 yards)
93	500–1,000 metres	(approx. 550 yards– $\frac{5}{6}$ n.m.)
94	1–2 km	(approx. $\frac{5}{6}$ –1 n.m.)
95	2–4 km	(approx. 1–2 n.m.)
96	4–10 km	(approx. 2–6 n.m.)
97	10–20 km	(approx. 6–12 n.m.)
98	20–50 km	(approx. 12–30 n.m.)
99	50 km or more	(30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

Institute: Pacific Oceanographic Group  
Nanaimo, B.C.

Observation Platforms: C.C.G.S. "St. Catharines" and  
C.C.G.S. "Stonetown".

Vessels' Cruising Speed: 13 knots.

Total Number of Stations Occupied: 19.

Anemometer Height Above Sea Level: 19 metres.

Water transparency was obtained using a Secchi Disc.

Barometer readings were obtained using an Aneroid Barometer and were corrected prior to recording.

Air Temperature was observed from a Sling Psychrometer.

Wet bulb temperature was observed from a Sling Psychrometer.

Surface sea water temperature was obtained from a bucket sample using a deck thermometer.

Depth to bottom was taken from C. & G.S. Chart 8500.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.02
Salinity	0.003
Oxygen	0.03



### **SECTION III**

**Serial oceanographic data**



C-REF-NO 006 YR 1963 DEPTH WAVES 1 14X1 AIR T 11.6 VIS 96  
 CONS. NO 001 MONTH 12 MXSAMPC 10 WAVES 2 22X2 WET B 11.1 STN 001  
 LAT 48-4CON DAY 04 NO.DPTH 18 WND-DIR 140 WW-CODE 51  
 LON 126-4COW HR 05.2 W-COLOR WND-SPD 02 CLD-TPE 7  
 MARSD SQ 157 W-TRNSP BARO 1023. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
052	0000	101 B	32176		2476	14871
052	0010	1000 C	32214		2480	14870
052	0020	1000 C	32215		2480	14872
052	0030	1000 B	32217		2480	14873
052	0050	1004 B	32230		2481	14878
052	0075	0852 B	32752		2546	14832
052	0100	0784 B	33191		2590	14816
052	0125	0717	33468		2621	14798
052	0150	0732	33715		2638	14811
052	0175	0709	33829		2651	14807
052	0200	0691	33915		2660	14806
052	0250	0666	33990		2669	14805
052	0300	0626	34016		2676	14797
052	0400	0562	34075		2689	14789
057	0495	0502	34115		2699	14781
057	0593	0457	34192		2711	14779
057	0791	0397	34291		2725	14788
057	0989	0350	34392		2737	14803

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1010 B	32176		2476	14871	0000	00000	3200
0010	1000 C	32214		2480	14870	0032	00002	3158
0020	1000	32215		2480	14872	0064	00007	3159
0030	1000 B	32217		2480	14873	0095	00015	3159
0050	1004 B	32230		2481	14878	0159	00041	3160
0075	0852 B	32752		2546	14832	0231	00086	2546
0100	0784 B	33191		2590	14816	0290	00138	2127
0125	0717	33468		2621	14798	0339	00195	1833
0150	0732	33715		2638	14811	0384	00257	1674
0175	0709	33829		2651	14807	0424	00325	1562
0200	0691	33915		2660	14805	0463	00398	1477
0225	0679	33964		2665	14805	0499	00478	1428
0250	0666	33990		2669	14805	0535	00565	1396
0300	0626	34016		2676	14797	0604	00758	1331
0400	0562	34075		2689	14789	0732	01218	1219
0500	0499	34119		2700	14780	0850	01762	1122
0600	0454	34196		2711	14779	0959	02371	1021
0700	0421	34250		2719	14783	1058	03035	0952

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0390	B	3431 C	2727	14787	1151	03749	0883
1000	0348		34396	2738	14804	1320	05301	0784

C-REF-NO C06 YR 1963 DEPTH C 2532 WAVES 1 14XX AIR T 11.1 VIS 94  
 CONS. NO C02 MONTH 12 MXSAMPD 20 WAVES 2 22XX WET B 11.1 STN 003  
 LAT 48-51ON DAY 04 NO.DPTH 21 WND-DIR 140 WW-CODE 51  
 LON 128-400W HR 13.1 W-COLOR WND-SPC 07 CLD-TPE 7  
 MARSD SQ 157 W-TRNSP BARO 1013. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
131	0000	100	B	32119	2473	14867
131	0010	0974	B	32208	2484	14860
131	0019	0974		32212	2484	14862
131	0029	0972	B	32222	2485	14863
131	0049	0974		32236	2486	14867
131	0074	0798	B	32615	2543	14810
131	0099	0765	B	33021	2579	14806
131	0124	0710		33471	2622	14795
131	0149	0710		33761	2645	14803
131	0173	0697		33864	2655	14803
131	0198	0676		33907	2661	14799
131	0246	0620		33946	2672	14785
131	0295	0581		33962	2678	14778
131	0391	0506		34029	2692	14764
138	0489	0468		34133	2705	14766
138	0586	0430		34202	2714	14767
138	0778	0387		34310	2727	14782
138	0971	0347		34392	2738	14799
138	1164	0307		34455	2747	14815
138	1456	0254	C	34524	2757	14842
138	1955	0198		34597	2767	14903

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1000	B	32119	2473	14867	0000	00000	3226
0010	0974	B	32208	2484	14860	0032	00002	3122
0020	0974		32213	2484	14862	0063	00006	3119
0030	0974	B	32220	2485	14863	0095	00014	3116
0050	0967		32247	2488	14865	0157	00040	3090
0075	0796	B	32631	2544	14809	0228	00085	2556
0100	0762	B	33040	2581	14806	0288	00138	2210
0125	0710		33486	2624	14795	0339	00196	1810
0150	0710		33768	2646	14803	0382	00256	1604
0175	0696		33869	2656	14803	0421	00321	1514
0200	0674		33909	2662	14799	0458	00393	1459
0225	0645		33934	2668	14791	0494	00472	1406
0250	0616		33948	2672	14784	0529	00557	1363
0300	0577		33964	2679	14777	0597	00747	1307
0400	0502		34039	2693	14764	0722	01193	1173

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0500	0463	34142		2706	14766	0835	01712	1062
0600	0426	34211		2715	14768	0938	02292	0977
0700	0402	34270		2723	14775	1033	02929	0915
0800	0382	34320		2729	14784	1123	03622	0864
1000	0341	34403		2739	14801	1289	05144	0771
1200	0300	34465		2748	14818	1437	06814	0692
1500	0249 B	34536		2758	14847	1633	09522	0598
2000	0195	34600		2768	14909	1915	14547	0510

C-REF-NO 006 YR 1963 DEPTH C 3767 WAVES 1 18X1 AIR T 08.8 VIS 97  
 CONS. NO 003 MONTH 12 MXSAMPC 10 WAVES 2 2544 WET B 07.2 STN 007  
 LAT 49-260N DAY 05 NO.DPTH 18 WND-DIR 180 WW-CODE 02  
 LON 136-400W HR 16.9 W-COLOR 20 WND-SPD 03 CLD-TPE 6  
 MARSD SQ 158 W-TRNSP 11 BARO 1019. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
169	0000	080	B	32532	2536	14797
169	0010	0792	B	32479	2533	14795
169	0020	0794		32481	2533	14797
169	0030	0793	B	32482	2533	14799
169	0050	0792		32481	2533	14802
169	0075	0794	B	32482	2533	14806
169	0100	0673	B	33209	2607	14773
169	0125	C656		33595	2639	14775
169	0149	C657		33829	2658	14783
169	0174	C638		33884	2664	14780
169	0199	C604		33935	2673	14771
169	0249	0559		33964	2681	14761
169	0299	0521	B	33982	2687	14754
169	0399	0468		34050	2698	14750
176	0498	0442		34137	2708	14757
176	0597	0400		34176	2715	14756
176	0796	0342		34278	2729	14766
176	0991	031C		34373	2740	14786

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0800	B	32532	2536	14797	0000	00000	2624
0010	0792	B	32479	2533	14795	0027	00001	2654
0020	0794		32481	2533	14797	0053	00005	2657
0030	0793	B	32482	2533	14799	0080	00012	2656
0050	0792		32481	2533	14802	0133	00034	2659
0075	0794	B	32482	2533	148C6	0200	00077	2664
0100	0673	B	33209	2607	14773	0259	00128	1965
0125	0656		33595	2639	14775	0304	00181	1659
0150	0657		33833	2658	14783	0344	00236	1486
0175	0637		33886	2665	14779	0381	00297	1425
0200	0603		33936	2673	14771	0416	00364	1348
0225	0578		33957	2678	14765	0449	00437	1306
0250	0558		33964	2681	14761	0482	00517	1279
0300	0520	B	33983	2687	14754	0545	00695	1226
0400	0468		34051	2698	14750	0663	01118	1125
0500	0441		34138	2708	14757	0773	01621	1040
0600	0399		34177	2716	14756	0874	02194	0972
0700	0366		34227	2723	14759	0969	02827	0907

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0340	3428	B	2729	14765	1058	03511	0850
1000	0309	34378		2740	14787	1220	05004	0754

C-REF-NO 006 YR 1963 DEPTH C 3913 WAVES 1 49XX AIR T 06.6 VIS 97  
 CONS. NO 004 MONTH 12 MXSAMPC 13 WAVES 2 2544 WET B 04.9 STN 010  
 LAT 49-5CON DAY 06 NO.DPTH 20 WND-DIR 230 WW-CODE 02  
 LON 142-4COW HR 15.4 W-COLOR WND-SPD 02 CLD-TPE  
 MARSD SQ 159 W-TRNSP BARO 1027. CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND
154	0000		32675			
154	0010	0681 B	32618	2559	14753	
154	0019	C682	32613	2559	14755	
154	0029	0684 B	32617	2559	14758	
154	0048	C681	32614	2559	14760	
154	0071	C683 B	32615	2559	14764	
154	0094	C614 B	32725	2576	14742	
154	0116	0516	32923	2604	14708	
154	0139	0420	33357	2648	14678	
154	0160	0388	33497	2663	14670	
154	0182	0392	33650	2674	14677	
154	0227	0390	33779	2685	14685	
154	0272	0390	33846	2690	14694	
154	0365	0378	33966	2701	14705	
154	0460	C369	34084	2711	14719	
160	0509	0368	34132	2715	14727	
160	0681	0344	34261	2728	14747	
160	0860	0312	34350	2738	14765	
160	1040	C282	34421	2746	14783	
160	1320	C252 C	34494	2755	14818	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
C000		32675						
0010	C681 B	32618	2559	14753	0024	00001	2405	
0020	0682	32613	2559	14755	0048	00005	2411	
0030	C684 B	32617	2559	14758	0073	00011	2412	
0050	C682	32612	2559	14760	0121	00031	2416	
0075	0675 B	32627	2561	14762	0182	00070	2399	
0100	0589 B	3276 B	2582	14733	0240	00121	2194	
0125	0474	3310 G	2622	14695	0290	00179	1819	
0150	0398	3345 D	2658	14671	0332	00237	1481	
0175	0389	33604	2671	14674	0367	00297	1355	
0200	0392	3372 C	2680	14681	0400	00360	1273	
0225	0390	33777	2685	14685	0432	00429	1231	
0250	0390	33817	2688	14690	0463	00504	1202	
0300	0387	33884	2693	14697	0522	00671	1154	
0400	0374	34012	2705	14710	0633	01069	1052	
0500	0368	34124	2714	14726	0736	01539	0970	

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0600	0358	34207		2722	14739	0830	02073	0905
0700	0341	34272		2729	14749	0919	02663	0846
0800	0323	34324		2735	14759	1002	03302	0795
1000	0288	34407		2744	14779	1154	04703	0709
1200	0264 B	34468		2752	14802	1292	06255	0649

C-REF-NO 006 YR 1963 DEPTH WAVES 1 1623 AIR T 06.6 VIS 96  
 CONS. NO C05 MONTH 12 MXSAMPC 04 WAVES 2 2536 WET B 04.9 STN  
 LAT 49-590N DAY 09 NO.DPTH 14 WND-DIR 160 WW-CODE 02  
 LON 145-000W HR 19.4 W-COLOR 10 WND-SPD 12 CLD-TPE 7  
 MARSD SQ 159 W-TRNSP 11 BARO 1025. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND
194	0000	C67 B	32707	700	2568	14749
194	0010	0628 B	32685	737	2571	14733
194	0019	0628	32687	694	2571	14735
194	0029	C630 B	32688	713 B	2571	14737
194	0048	0628	32686	702 B	2571	14739
194	0073	0628 B	32690	706 B	2572	14743
194	0097	0413	33164	622 B	2634	14665
194	0121	C356	33432	545 B	2661	14649
194	0146	0340	33565	469 B	2673	14648
194	0171	0336	33621	421 B	2677	14651
194	0196	C337	33713	354 B	2685	14657
194	0246	C353	33825	249 B	2692	14673
194	0296	0360	33914	222 B	2699	14686
194	0396	0362	34034	142 B	2708	14705

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	C670 B	32707	700	2568	14749	0000	00CC0	2323
C010	0628 B	32685	737	2571	14733	0023	00001	2290
C020	0628	32687	695	2571	14735	0046	00005	2289
0030	0630 B	32688	713 B	2571	14737	0069	00011	2292
0050	0632 B	3268 B	704 B	2570	14741	0116	00030	2305
0075	0611 C	3273 C	701 B	2577	14737	0173	00066	2247
0100	0400	33207	612 B	2638	14661	0222	00109	1659
0125	0352	33461	532 B	2663	14648	0261	00154	1423
0150	0339	33575	461 B	2674	14648	0296	00203	1327
0175	0336	33635	411 B	2679	14652	0328	00257	1281
0200	0338	33724	343 B	2685	14658	0360	00318	1218
0225	0346	33785	286 B	2690	14666	0390	00384	1181
0250	0354	33833	246 B	2693	14674	0420	00456	1155
0300	0362	33921	196 E	2699	14687	0476	00616	1100
0400	0362	34037	142 B	2708	14705	0583	00998	1021

C-REF-NO C06 YR 1963 DEPTH WAVES 1 49XX AIR T 06.1 VIS 97  
 CONS. NO C06 MONTH 12 MXSAMPD 42 WAVES 2 2445 WET B 04.9 STN  
 LAT 50-CCON DAY 12 NO.DPTH 26 WND-DIR 990 WW-CCDE 02  
 LON 144-590W HR 18.9 W-COLOR 10 WND-SPC 02 CLD-TPE 6  
 MARSQ SQ 195 W-TRNSP 18 BARO 1029. CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	
189	0000	C64	B	32700	707 B	2571	14736
189	0010	C622	B	32705	701 B	2574	14731
189	0019	C622		32699	705 B	2573	14732
189	0029	C626	B	32701	710 B	2573	14736
189	0048	C622		32700	714 B	2573	14737
189	0072	C621	B	32702	704 B	2574	14741
189	0096	0448	B	33167	626 B	2630	14680
189	0120	0381		33380	594 B	2654	14658
189	0144	C359	B	33522	501 B	2667	14655
189	0168	C338		33615	434 B	2677	14651
189	0191	0338		33687	379 B	2683	14656
189	0239	0349		33788	277 B	2690	14670
189	0287	C359		33893	227 B	2697	14684
189	0385	C364		34050	159 B	2709	14704
196	0491	C359		34152	Q152 B	2718	14721
196	0589	0346		34222	102 B	2724	14732
196	0785	0312		34337	104 B	2737	14752
196	0982	C282		34414	111 B	2746	14773
196	1182	0259		34466	133 B	2752	14797
196	1482	0234	B	34525	166 B	2759	14838
196	1982	0196	B	34615	207	2769	14907
213	2491	0174		34641	247	2773	14985
213	2990	0159		34673	280	2776	15065
213	3490	0152		34686	290	2778	15149
213	3990	0154	B	34699	331	2779	15238
213	4190	0152		34704	339	2779	15273

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA	
0000	C64C	B	32700	707 B	2571	14736	0000	00000	2292
0010	0622	B	32705	701 B	2574	14731	0023	00001	2267
0020	C622		32699	706 B	2573	14733	0046	00005	2274
0030	C626	B	32701	710 B	2573	14736	0069	00011	2277
0050	C625		3269	715 B	2572	14739	0115	00029	2286
0075	0601	C	3275	D 695 B	2580	14734	0171	00066	2213
0100	0432	B	3321	B 621 B	2636	14674	0220	00109	1685
0125	0375		33415	576 B	2657	14657	0260	00154	1480
0150	0353	B	33548	483 B	2670	14654	0296	00205	1360
0175	0337		33639	417 B	2679	14652	0329	00260	1279

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0200	0340	33708	357 B	2684	14658	0361	00321	1231
0225	0345	33762	303 B	2688	14666	0391	00388	1198
0250	0352	33813	263 B	2691	14673	0421	00460	1168
0300	0361	33918	215 B	2699	14687	0478	00622	1101
0400	0364	34067	157 B	2710	14707	0585	01000	1000
0500	0358	34159	148 B	2718	14722	0682	01450	0933
0600	0344	34229	100 B	2725	14733	0773	01965	0874
0700	0327	34292	094 C	2732	14744	0859	02534	0817
0800	0310	34344	104 B	2738	14753	0939	03151	0766
1000	0280	34419	113 B	2746	14775	1086	04508	0691
1200	0257	34470	135 B	2752	14800	1221	06031	0641
1500	0232 B	34529	168 B	2759	14840	1408	08610	0585
2000	0195 B	34616	208	2769	14910	1683	13521	0499
2500	0174	34642	248	2773	14987	1930	19246	0472
3000	0159	34673	280	2776	15067	2164	25881	0445
3500	0152	34686	291	2778	15151	2391	33500	0441
4000	0152	34699	327	2779	15240	2618	42335	0446

C-REF-NO 006 YR 1963 DEPTH WAVES 1 1222 AIR T 06.1 VIS 97  
 CONS. NO 007 MONTH 12 MXSAMPD 04 WAVES 2 4924 WET B 05.5 STN  
 LAT 50-050N DAY 16 NO.DPTH 14 WND-DIR 120 HW-CCDE 02  
 LON 144-560W HR 19.1 W-COLOR 30 WND-SPD 10 CLD-TPE 6  
 MARSD SQ 195 W-TRNSP 17 BARO 1004. CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	
191	0000	C65	B	32689	701 B	2569	14740
191	0010	C616	B	32690	719 B	2573	14728
191	0020	C618		32692	707 B	2573	14731
191	0030	C620	B	32695	709 B	2573	14733
191	0050	C617	B	32693	700 B	2573	14735
191	0075	C616	B	32693	705 B	2573	14739
191	0100	0464		33137	619 B	2626	14687
191	0124	C377		33389	544 B	2655	14658
191	0149	C356	B	33554	479 B	2670	14655
191	0174	0338		33628	405 B	2678	14652
191	0199	0342		33724	350 B	2685	14659
191	0249	C354		33845	250 B	2694	14674
191	0299	C361		33933	222 B	2700	14687
191	0398	C364		34077	123 B	2711	14706

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA	
COCO	C650	B	32689	701 B	2569	14740	0000	00000	2312
0010	C616	B	32690	719 B	2573	14728	0023	00001	2272
0020	C618		32692	707 B	2573	14731	0046	00005	2274
0030	0620	B	32695	709 B	2573	14733	0069	00011	2275
0050	C617	B	32693	700 B	2573	14735	0115	00029	2275
0075	C616	B	32693	705 B	2573	14739	0172	00066	2277
0100	0464		33137	619 B	2626	14687	0223	00111	1776
0125	0375		33397	541 B	2656	14657	0264	00158	1494
0150	0355	B	33558	476 B	2671	14655	0300	00209	1356
0175	0338		33632	403 B	2678	14653	0333	00264	1285
0200	0342		33727	348 B	2685	14660	0365	00325	1220
0225	0348		33795	293 B	2690	14667	0395	00390	1176
0250	0354		33847	249 B	2694	14675	0424	00462	1144
0300	0361		3394	199 E	2700	14687	0480	00620	1085
0400	0364		34079	122 B	2711	14707	0585	00995	0991

C-REF-NO 006 YR 1963 DEPTH WAVES 1 3222 AIR T 06.1 VIS 93  
 CONS. NO 008 MONTH 12 MXSAMPD 20 WAVES 2 3024 WET B 06.1 STN  
 LAT 49-550N DAY 19 NO.DPTH 21 WND-DIR 320 WW-CODE 55  
 LON 144-570W HR 19.0 W-COLOR 10 WND-SPD 12 CLD-TPE 5  
 MARSD SQ 159 W-TRNSP 13 BARO 985. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
190	0000	C65 B	32666	694 B	2567	14740
190	0010	0617 B	32665	708 B	2571	14728
190	0020	0618	32673	670 B	2572	14731
190	0030	0620 B	32675	668 B	2572	14733
190	0050	0618	32685	650 B	2573	14736
190	0075	0618 B	32686	639 B	2573	14740
190	0100	0475	33106	608 B	2623	14691
190	0124	0375	33446	569 B	2660	14657
190	0149	0358	33588	488 B	2673	14656
190	0174	0352	33668	396 B	2680	14659
190	0199	0348	33743	334 B	2686	14662
190	0249	0352	33839	213 B	2693	14674
190	0298	0358	33922	180 B	2699	14685
190	0400	0366	34037	125 B	2708	14707
196	0498	0357	34144	113	2717	14721
196	0597	0345		Q157		
196	0797	0314	34324	119 B	2735	14755
196	0996	0284	34404	088 B	2745	14776
196	1195	0258		081 B		
196	1493	0230	34522	091 B	2759	14838
196	1999	0193	34601	152	2768	14909

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0650 B	32666	694 B	2567	14740	0000	00000	2329
0010	0617 B	32665	708 B	2571	14728	0023	00001	2291
0020	0618	32673	670 B	2572	14731	0046	00005	2288
0030	0620 B	32675	668 B	2572	14733	0069	00011	2290
0050	0618	32685	650 B	2573	14736	0115	00030	2282
0075	0618 B	32686	639 B	2573	14740	0173	00066	2284
0100	0475	33106	608 B	2623	14691	0224	00112	1811
0125	0373	33454	566 B	2661	14657	0265	00159	1449
0150	0358	33592	484 B	2673	14656	0300	00208	1332
0175	0352	33671	393 B	2680	14659	0333	00262	1269
0200	0348	33745	331 B	2686	14662	0364	00323	1211
0225	0349	33798	265 B	2690	14668	0395	00388	1174
0250	0352	33841	212 B	2693	14674	0424	00459	1147
0300	0358	33925	179 B	2700	14686	0480	00619	1094
0400	0366	34037	125 B	2708	14707	0587	01001	1025

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0500	0357	34146	114	2717	14721	0687	01459	0942
0600	0345	3422	B 157	2724	14734	0779	01977	0880
0700	0330	3428	B 148 C	2731	14745	0865	02553	0827
0800	0314	34325	118 B	2736	14755	0946	03180	0784
1000	0283	34405	088 B	2745	14776	1097	04568	0705
1200	0257	34462	081 B	2752	14800	1234	06113	0647
1500	0228	3454	C 090 B	2760	14838	1420	08681	0575
2000	0193	34601	152	2768	14909	1695	13598	0507

C-REF-NO 006 YR 1963 DEPTH WAVES 1 22X1 AIR T 05.5 VIS 97  
 CONS. NO 009 MONTH 12 MXSAMPC 04 WAVES 2 2625 WET B 04.4 STN  
 LAT 50-010N DAY 23 NO.DPTH 14 WND-DIR 220 WND-CODE 02  
 LON 145-000W HR 18.9 W-COLOR 10 WND-SPD 06 CLD-TPE 8  
 MARSD SQ 195 W-TRNSP 13 BARO 1000. CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	
189	0000	062	B	32674	681 B	2571	14728
189	0010	0597	B	32675	685 B	2574	14720
189	0020	0596		32672	686 B	2574	14722
189	0030	0599	B	32675	691 B	2574	14725
189	0049	0596		32676	690 B	2575	14726
189	0073	0598	B	32676	694 B	2574	14731
189	0096	0598		32684	686 B	2575	14735
189	0119	0597		32719	654 B	2578	14739
189	0142	0428	B	33330	538 B	2645	14681
189	0165	0368		33546	470	2668	14663
189	0188	0355		33652	401 B	2678	14662
189	0234	0343		33766	308 B	2688	14666
189	0281	0350		33867	224 B	2696	14678
189	0376	0362		34025	147 B	2707	14701

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA	
0000	0620	B	32674	681 B	2571	14728	0000	00000	2287
0010	0597	B	32675	685 B	2574	14720	0023	00001	2260
0020	0596		32672	686 B	2574	14722	0046	00005	2263
0030	0599	B	32675	691 B	2574	14725	0068	00011	2265
0050	0596		32676	690 B	2575	14727	0114	00029	2263
0075	0598	B	32676	694 B	2574	14732	0171	00066	2268
0100	0604	B	3267 D	684 B	2573	14738	0228	00117	2284
0125	0556	E	3287 I	625 B	2595	14725	0283	00180	2079
0150	0398	B	3343 D	512 B	2657	14671	0328	00243	1490
0175	0359		33601	439	2674	14661	0364	00302	1329
0200	0350		3369 B	373 B	2682	14663	0396	00364	1256
0225	0344		33749	323 B	2687	14665	0427	00432	1206
0250	0344		33802	277 B	2691	14670	0457	00505	1169
0300	0346	B	33904	205 B	2699	14680	0514	00666	1098

C-REF-NO 006 YR 1963 DEPTH WAVES 1 1720 AIR T 06.1 VIS 97  
 CONS. NO 010 MCNTH 12 MXSAMPD 42 WAVES 2 2445 WET B 04.9 STN  
 LAT 49-590N DAY 29 NO.DPTH 26 WND-DIR 170 W-W-CODE 02  
 LON 144-570W HR 19.8 W-COLOR 30 WND-SPD 02 CLD-TPE 6  
 MARSD SQ 159 W-TRNSP 14 BARO 986. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND		
198	0000	059	B	327C3	679	B	2577	14716
198	0010	0580	B	32676	682	B	2577	14714
198	0020	0582		32672	680	B	2576	14716
198	0030	0582		32669	681	B	2576	14718
198	0050	0579	B	32665	684	B	2576	14720
198	0075	0582	B	32670	680	B	2576	14725
198	0100	0513		32988	633	B	2609	14705
198	0125	0383		33440	590	B	2659	14661
198	0150	0363	B	33564	499	B	2670	14658
198	0175	0354		33661	406	B	2679	14660
198	0200	0348		33720	333	B	2684	14662
198	0250	0347		33831	250	B	2693	14671
198	0300	0357		33909	177	B	2698	14685
198	0400	0362		34051	148	B	2709	14706
198	0500	C357		34142	111	B	2717	14721
198	0600	0344		34230	107	B	2725	14733
206	0800	0313		34335	095	B	2736	14755
206	1000	0284		34398	089	B	2744	14777
206	1200	0258		34465	080	B	2752	14800
206	1500	0229		34523	Q131	B	2759	14838
206	2000	0191		34600	144		2768	14908
206	2500	0172		34639	219		2773	14986
206	3000	0157		34669	300		2776	15066
206	3500	0152		34686	344		2778	15151
206	4000	0152		34694	358		2778	15239
206	4200	0152		34698	372		2779	15275

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA		
0000	0590	B	32703	679	B	2577	14716	CC00	00CC0	2230
0010	0580	B	32676	682	B	2577	14714	0022	00001	2240
0020	0582		32672	680	B	2576	14716	0045	00005	2246
0030	0582		32669	681	B	2576	14718	0068	00010	2250
0050	0579	B	32665	684	B	2576	14720	0113	00029	2251
0075	0582	B	32670	680	B	2576	14725	0170	00065	2254
0100	0513		32988	633	B	2609	14705	0222	00112	1940
0125	0383		33440	590	B	2659	14661	0265	00161	1469
0150	0363	B	33564	499	B	2670	14658	0301	00211	1358
0175	0354		33661	406	B	2679	14660	0334	00266	1279

DEPTH	T	E	M	P	S	A	L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0200	0348	33720	333	B	2684	14662	0366	00327	1230				
0225	0346	33778	286	B	2689	14666	0396	00394	1186				
0250	0347	33831	250	B	2693	14671	0426	00465	1149				
0300	0357	33909	177	B	2698	14685	0483	00626	1104				
0400	0362	34051	148	B	2709	14706	0589	01007	1011				
0500	0357	34142	111	B	2717	14721	0688	01462	0945				
0600	0344	34230	107	B	2725	14733	0780	01979	0873				
0700	0329	34291	101	B	2731	14744	0865	02550	0819				
0800	0313	34335	095	B	2736	14755	0946	03171	0776				
1000	0284	34398	089	B	2744	14777	1097	04559	0711				
1200	0258	34465	080	B	2752	14800	1234	06108	0645				
1500	0229	34523	131	B	2759	14839	1421	08697	0585				
2000	0191	34600	144		2768	14908	1698	13646	0506				
2500	0172	34639	219		2773	14986	1947	19406	0472				
3000	0157	34669	300		2776	15066	2181	26045	0446				
3500	0152	34686	344		2778	15151	2408	33669	0441				
4000	0152	34694	358		2778	15240	2636	42538	0449				

C-REF-NO 006 YR 1964 DEPTH WAVES 1 49XX AIR T 06.1 VIS  
 CONS. NO 011 MONTH 1 MXSAMPD 04 WAVES 2 49XX WET B 03.3 STN  
 LAT 49-580N DAY 06 NO.DPTH 14 WND-DIR 260 WW-CCDE 03  
 LON 145-120W HR 01.9 W-COLOR 10 WND-SPD 07 CLD-TPE 6  
 MARSD SQ 159 W-TRNSP 08 BARO 1015. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND
019	0000	055 B	32769	610 B	2587	14701
019	0020	0562 B	32680	639 B	2579	14708
019	0030	0566	32687	595 B	2579	14711
019	0040	0566 B	32689	634 B	2579	14713
019	0060	0562	32684	635	2579	14715
019	0085	0505 B	32981	604 B	2609	14699
019	0109	0397	33427	571 B	2656	14664
019	0134	0370	33529	507 B	2667	14658
019	0159	0357 B	33650	437 B	2678	14658
019	0184	0357	33735	370 B	2685	14664
019	0209	0354	33787	306 B	2689	14667
019	0259	0362	33889	240 B	2696	14680
019	0309	0370	33972	194 B	2702	14693
019	0409	0367	34095	130 B	2712	14710

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0550 B	32769	610 B	2587	14701	0000	00000	2135
0010	0558	3272 B	606 E	2583	14705	0022	00001	2182
0020	0562 B	32680	639 B	2579	14708	0044	00005	2218
0030	0566	32687	595 B	2579	14711	0066	00010	2218
0050	0567 B	3267 C	642 B	2578	14715	0111	00029	2231
0075	0535	3283 B	619	2594	14708	0165	00063	2079
0100	0436 C	3327 G	585 B	2640	14677	0212	00105	1647
0125	0374 B	3351 E	532 B	2665	14658	0251	00149	1406
0150	0360	33607	462 B	2674	14658	0285	00197	1323
0175	0356	33708	394 B	2683	14661	0317	00251	1245
0200	0355	33770	328 B	2688	14666	0348	00310	1199
0225	0356	33821	279 B	2692	14671	0378	00375	1164
0250	0360	33871	248 B	2695	14677	0407	00446	1132
0300	0369	33958	201 B	2701	14691	0463	00603	1079
0400	0368	34087	133 B	2711	14708	0567	00976	0990

C-REF-NO 006 YR 1964 DEPTH WAVES 1 1820 AIR T 06.1 VIS 97  
 CONS. NO 012 MONTH 1 MXSAMPC 19 WAVES 2 2736 WET B 05.5 STN  
 LAT 50-00CON DAY 06 NO.DPTH 21 WND-DIR 200 WW-CODE 01  
 LON 145-020W HR 18.9 W-COLOR 30 WND-SPD 05 CLD-TPE 7  
 MARSQ SQ 195 W-TRNSP 12 BARO 1014. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T	E	M	P	S	A	L	CXYGEN	SGMT	SOUND
189	0000		056	B	32759		598	B	2585	14705	
189	0010		0563	B	32685		691	B	2579	14707	
189	0019		0564		32677		578		2579	14709	
189	0029		0567		32678		650		2578	14711	
189	0048		0566		32680		599	B	2579	14714	
189	0072		0566	B	32681		610	B	2579	14718	
189	0096		0404		33367		600		2651	14664	
189	0121		0364		33540		504	B	2668	14654	
189	0145		0355		33617		448	B	2675	14655	
189	0169		0352		33685		377	B	2681	14658	
189	0193		0348		33734		318	B	2685	14661	
189	0241		0343		33809		251	B	2692	14668	
189	0290		0356		33907		174	B	2698	14683	
189	0388		0363		34040		143	B	2708	14704	
195	0473		0360		34130		124	B	2716	14718	
195	0568		0346		34218		107	B	2724	14729	
195	0758		0316		34324		103	B	2735	14749	
195	0949		0287		34392		094	B	2743	14769	
195	1142		0260		34449	Q	065	B	2750	14791	
195	1436		0231		34525		114	B	2759	14829	
195	1930		0196		34592		142		2767	14898	

## I N T E R P O L A T E D

DEPTH	T	E	M	P	S	A	L	CXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0560	B	32759		598	B	2585	14705	0000	00000	00000	2154	
0010	0563	B	32685		691	B	2579	14707	0022	00001	00001	2214	
0020	0564		32677		582	B	2578	14709	0044	00005	00005	2223	
0030	0567		32678		650		2578	14712	0067	00010	00010	2226	
0050	0569		3267	C	599	B	2577	14716	0112	00029	00029	2238	
0075	0547	C	3276	G	612	B	2587	14712	0167	00064	00064	2145	
0100	0392		3342	D	586		2656	14660	0213	00104	00104	1494	
0125	0361		3355	6	494	B	2670	14653	0249	00145	00145	1361	
0150	0354		3363	2	433	B	2677	14655	0282	00193	00193	1259	
0175	0351		3369	9	361	B	2682	14659	0314	00246	00246	1248	
0200	0347		3374	5	306	B	2686	14662	0345	00306	00306	1210	
0225	0343		3378	5	270	B	2690	14665	0375	00371	00371	1179	
0250	0345		3382	7	236	B	2693	14671	0405	00443	00443	1150	
0300	0358		3392	3	167	B	2699	14685	0461	00602	00602	1094	
0400	0363		3405	4	140	B	2709	14706	0567	00982	00982	1010	

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0500	0357	34157	118 B	2718	14721	0665	01434	0934
0600	0341	34240	105 B	2726	14732	0756	01945	0862
0700	0325	34299	102 B	2732	14743	0841	02508	0810
0800	0309	34341	102 B	2737	14753	0920	03123	0768
1000	0279	34408	085 B	2745	14775	1069	04491	0699
1200	0253	34466	071 B	2752	14798	1205	06020	0639
1500	0223	34535	089 G	2760	14836	1389	08564	0570

C-REF-NO 006 YR 1964 DEPTH WAVES 1 2722 AIR T 04.4 VIS 97  
 CONS. NO 013 MONTH 1 MXSAMPC 04 WAVES 2 2945 WET B 01.6 STN  
 LAT 49-540N DAY 09 NO.DPTH 14 WND-DIR 270 WW-CODE 01  
 LON 145-070W HR 19.3 W-COLOR 30 WND-SPD 07 CLD-TPE 8  
 MARSD SQ 159 W-TRNSP 12 BARO 1022. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	
193	0000	055	B	32833	715	2592	14702
193	0010	0553	B	32794	723	2589	14704
193	0020	0556	B	32784	725	2588	14707
193	0030	0558		32806	724	2589	14710
193	0050	0555	B	32756	725	2586	14711
193	0075	0555	B	32803	720	2590	14716
193	0100	0437		33278	620	2640	14677
193	0125	0378		33536	550	2667	14660
193	0150	0366		33738		2684	14662
193	0175	0365		33752	382	2685	14666
193	0200	0358		33804	315	2690	14668
193	0250	0367		33906	256	2697	14681
193	0300	0369		33974	210	2702	14691
193	0400	0370		34096	172	2712	14710

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0550	B	32833	715	2592	0000	00000	2087
0010	0553	B	32794	723	2589	0021	00001	2121
0020	0556	B	32784	725	2588	0043	00004	2133
0030	0558		32806	724	2589	0064	00010	2120
0050	0555	B	32756	725	2586	0107	00028	2156
0075	0555	B	32803	720	2590	0161	00062	2123
0100	0437		33278	620	2640	0208	00104	1642
0125	0378		33536	550	2667	0246	00148	1392
0150	0366		33738	466	2684	0280	00194	1230
0175	0365		33752	382	2685	0310	00245	1221
0200	0358		33804	315	2690	0341	00304	1177
0225	0361		33857	278	2694	0370	00367	1141
0250	0367		33906	256	2697	0398	00437	1113
0300	0369		33974	210	2702	0453	00592	1068
0400	0370		34096	172	2712	0557	00962	0985

C-REF-NO 006 YR 1964 DEPTH WAVES 1 1624 AIR T 06.6 VIS 96  
 CONS. NO 014 MONTH 1 MXSAMPD 42 WAVES 2 1935 WET B 06.1 STN  
 LAT 50-00ON DAY 10 NO.DPTH 26 WND-DIR 160 WW-CODE 61  
 LON 145-020W HR 19.7 W-COLOR 30 WND-SPD 10 CLD-TPE 5  
 MARSD SQ 195 W-TRNSP 13 BARO 1005. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
197	0000	058 B	32676	723 B	2577	14712
197	0010	0558 B	32675	726 B	2579	14705
197	0020	0555	32751	731	2585	14706
197	0030	0556	32707	723 B	2582	14707
197	0050	0554	32682	715 B	2580	14710
197	0075	0558 B	32682	714 B	2580	14715
197	0100	0414	33338	715 B	2647	14669
197	0125	0370	33501	582 B	2665	14656
197	0150	C356	33621	520 B	2676	14656
197	0175	C352	33699	441 B	2682	14659
197	0200	0349	33755	368 B	2687	14663
197	0250	0349	33854	281 B	2695	14673
197	0300	C360	33941	212 B	2701	14687
197	0400	C361	34061	130 B	2710	14705
197	0500	C356	34162	108	2719	14721
197	0600	0342 B	34233		2726	14733
205	0795	C313		086		
205	0994	C286 B	34410	075 B	2745	14777
205	1193	0255	34473	093 B	2753	14797
205	1492	C226	34530	106 B	2760	14836
205	1991	0192	34598	144 B	2768	14907
205	2490	0173	34671	246 B	2775	14985
205	2989	0159	34675	300 B	2776	15065
205	3488	0152		325 B		
205	3993	0153	34706	352	2779	15239
205	4197	0152	34702	347	2779	15274

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0580 B	32676	723 B	2577	14712	0000	00000	2239
0010	0558 B	32675	726 B	2579	14705	0022	00001	2216
0020	0555	32751	731	2585	14706	0044	00005	2156
0030	0556	32707	723 B	2582	14707	0066	00010	2192
0050	0554	32682	715 B	2580	14710	0111	00028	2210
0075	0558 B	32682	714 B	2580	14715	0166	00064	2217
0100	0414	33338	715 B	2647	14669	0214	00106	1574
0125	0370	33501	582 B	2665	14656	0252	00149	1411
0150	0356	33621	520 B	2676	14656	0286	00197	1309
0175	0352	33699	441 B	2682	14659	0318	00251	1248

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0200	0349	33755	368 B	2687	14663	0349	00310	1205
0225	0348	33806	318 B	2691	14667	0379	00375	1167
0250	0349	33854	281 B	2695	14673	0408	00446	1134
0300	0360	33941	212 B	2701	14687	0464	00604	1083
0400	0361	34061	130 B	2710	14705	0569	00980	1002
0500	0356	34162	108	2719	14721	0667	01429	0929
0600	0342 B	34233	097	2726	14733	0757	01941	0869
0700	0327	3429 B	089	2731	14744	0843	02510	0819
0800	0312	3434 B	086	2737	14755	0923	03130	0774
1000	0285 B	34412	075 B	2745	14777	1073	04506	0702
1200	0254	34475	093 B	2753	14798	1208	06031	0634
1500	0225	34531	106 B	2760	14837	1392	08575	0575
2000	0192	34600	146 B	2768	14908	1666	13490	0507
2500	0173	34671	247 B	2775	14987	1910	19106	0449
3000	0159	34675	301 B	2776	15067	2138	25580	0444
3500	0152	3469 B	326 B	2778	15152	2362	33134	0435
4000	0152	34701	347	2779	15240	2588	41895	0444

C-REF-NO 006 YR 1964 DEPTH C 3886 WAVES 1 20XX AIR T 06.6 VIS 97  
 CONS. NO 015 MONTH 1 MXSAMPD 04 WAVES 2 2467 WET B 05.5 STN 008  
 LAT 49-360N DAY 14 NO.DPTH 14 WND-DIR 200 WW-CODE 02  
 LON 138-400W HR 03.9 W-COLOR WND-SPD 10 CLD-TPE 6  
 MARSD SQ 158 W-TRNSP BARO 1013. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
039	0000	070	B	32593	2555	14759
039	0010	0700	B	32506	2548	14759
039	0020	0702		32508	2548	14762
039	0030	0702		32507	2548	14763
039	0050	0700		32512	2548	14766
039	0075	0684	B	32541	2553	14764
039	0100	0674		32565	2556	14765
039	0125	0609	B	32926	2593	14747
039	0150	0581		33701	2657	14751
039	0175	0569		33819	2668	14751
039	0200	0548		33846	2673	14747
039	0250	0505		33877	2680	14738
039	0300	0458	B	33958	2692	14728
039	0400	0416		34004	2700	14728

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0700	B	32593	2555	14759	0000	00000	2446
0010	0700	B	32506	2548	14759	0025	00001	2512
0020	0702		32508	2548	14762	0050	00005	2515
0030	0702		32507	2548	14763	0076	00012	2517
0050	0700		32512	2548	14766	0126	00032	2513
0075	0684	B	32541	2553	14764	0189	00073	2474
0100	0674		32565	2556	14765	0251	00128	2447
0125	0609	B	32926	2593	14747	0308	00194	2100
0150	0581		33701	2657	14751	0353	00256	1491
0175	0569		33819	2668	14751	0390	00317	1391
0200	0548		33846	2673	14747	0424	00383	1349
0225	0527		33860	2676	14743	0458	00456	1317
0250	0505		33877	2680	14738	0490	00536	1282
0300	0458	B	33958	2692	14728	0552	00710	1173
0400	0416		34004	2700	14728	0667	01121	1102

C-REF-NO 006 YR 1964 DEPTH C 2935 WAVES 1 2222 AIR T 08.8 VIS 97  
 CONS. NO 016 MONTH 1 MXSAMPC 15 WAVES 2 2234 WET B 07.7 STN 004  
 LAT 49-010N DAY 15 NO.DPTH 20 WND-DIR 220 WW-CODE 02  
 LON 130-400W HR 05.4 W-COLOR WND-SPD 06 CLD-TPE 8  
 MARSD SQ 158 W-TRNSP BARO 1013. CLD-AMT 3 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
054	0000	086	B	32473	2522	14819
054	0010	0811	B	32437	2527	14802
054	0019	0813		32436	2527	14804
054	0029	0814		32436	2526	14806
054	0048	0812		32431	2526	14808
054	0072	0814	B	32435	2526	14813
054	0096	0799		32523	2535	14812
054	0121	0732		33494	2621	14803
054	0145	0668		33630	2641	14784
054	0169	C657		33788	2654	14785
054	0193	C647		33959	2669	14788
054	0241	0589		34022	2682	14773
054	0290	0540		34057	2690	14762
054	0388	0469		33994	2694	14748
060	0488	0432		34102	2706	14750
060	0585	0411		34169	2714	14758
060	0782	0366		34290	2728	14774
060	0980	0330		34384	2739	14793
060	1178	C291		34453	2748	14810
060	1476	0244		34517	2757	14841

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA	
0000	0860	B	32473	2522	14819	0000	00000	2753	
0010	0811	B	32437	2527	14802	0027	00001	2712	
0020	0813		32436	2527	14804	0055	00006	2717	
0030	0814		32436	2526	14806	0082	00013	2720	
0050	0812		32430	2526	14809	0137	00035	2725	
0075	0814	B	3242	E	2525	14813	0206	00079	2737
0100	0790		3268	I	2549	14811	0272	00138	2518
0125	0719		3354	F	2627	14799	0326	00199	1781
0150	0663		33661		2644	14783	0369	00260	1623
0175	0655		33835		2658	14786	0408	00325	1487
0200	0640		3398	C	2672	14786	0444	00393	1362
0225	0611		3402	D	2679	14779	0477	00466	1296
0250	0579		34031		2684	14771	0509	00545	1255
0300	0531		3405	B	2691	14760	0571	00718	1188
0400	0463		3400	B	2695	14747	0689	01142	1155
0500	0429		34111		2707	14751	0800	01653	1046

DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0600	0407	34179		2715	14760	0903	02230	0980
0700	0384	34243		2722	14767	0998	02868	0916
0800	0363	34300		2729	14775	1088	03558	0857
1000	0326	34392		2740	14794	1252	05065	0762
1200	0289	34460		2749	14813	1398	06715	0683
1500	0240	34520		2758	14843	1594	09412	0600

C-REF-NO 006 YR 1964 DEPTH C 2532 WAVES 1 21XX AIR T 08.8 VIS 98  
 CONS. NO 017 MONTH 1 MXSAMPC 20 WAVES 2 2234 WET B 07.4 STN 003  
 LAT 48-510N DAY 15 NO.DPTH 21 WND-DIR 210 WW-CODE 02  
 LON 128-400W HR 12.4 W-COLOR WND-SPD 06 CLD-TPE 6  
 MARSD SQ 157 W-TRNSP BARO 1016. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
124	0000	084	B	32458	2524	14812
124	0010	0850	B	32413	2519	14816
124	0020	0852		32412	2519	14819
124	0030	0852		32424	2520	14821
124	0050	0850		32430	2521	14823
124	0075	0850	B	32419	2520	14827
124	0100	0733		33304	2606	14798
124	0125	C699		33644	2637	14793
124	0150	0704		33792	2648	14801
124	0175	C678		33903	2661	14796
124	0200	0652		33919	2665	14790
124	0250	0597		33960	2676	14777
124	0300	0552		33969	2682	14767
124	0400	0491		34043	2695	14759
130	0500	0464		34136	2705	14766
130	C600	0419		34194	2715	14765
130	0800	0375		34322	2729	14781
130	1000	0334		34401	2740	14798
130	1200	0292	B	34459	2748	14814
130	1500	0243		34517	2757	14844
130	2000	0193		34607	2768	14909

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	084C	B	32458	2524	14812	0C00	00000	2735
0010	0850	B	32413	2519	14816	0028	00001	2784
0020	0852		32412	2519	14819	0056	00006	2790
0030	0852		32424	2520	14821	0084	00013	2782
0050	0850		32430	2521	14823	0140	00036	2778
0075	0850	B	32419	2520	14827	0210	00081	2790
0100	0733		33304	2606	14798	0270	00133	1973
0125	C699		33644	2637	14793	0316	00186	1679
0150	0704		33792	2648	14801	0357	00244	1579
0175	C678		33903	2661	14796	0395	00307	1465
0200	C652		33919	2665	14790	0431	00377	1423
0225	C624		33941	2671	14783	0467	00454	1375
0250	0597		33960	2676	14777	0501	00537	1330
0300	0552		33969	2682	14767	0566	00722	1274
0400	0491		34043	2695	14759	0689	01160	1158

DEPTH	T	E	M	P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0464				34136		2705	14766	0801	01677	1067
0600	0419				34194		2715	14765	0905	02260	0982
0700	0393	B			34260		2723	14771	1001	02898	0912
0800	0375				34322		2729	14781	1090	03585	0854
1000	0334				34401		2740	14798	1254	05093	0764
1200	0292	B			34459		2748	14814	1401	06750	0687
1500	0243				34517		2757	14844	1598	09467	0606
2000	0193				34607		2768	14909	1879	14482	0503

C-REF-NO 006 YR 1964 DEPTH C 2496 WAVES 1 49XX AIR T 08.3 VIS 97  
 CONS. NO 018 MONTH 1 MXSAMPC 20 WAVES 2 2223 WET B 07.2 STN 002  
 LAT 48-460N DAY 15 NO.DPTH 21 WND-DIR 990 WW-CODE 02  
 LON 127-40W HR 17.1 W-COLOR 10 WND-SPD 01 CLD-TPE 6  
 MARSD SQ 157 W-TRNSP 18 BARO 1015. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T	E	M	P	S A L	OXYGEN	SGMT	SOUND
171	0000	088				32437		2517	14826
171	0010	0889	B			32429		2515	14831
171	0019	0891				32467		2517	14834
171	0029	0892				32491		2519	14836
171	0048	0891				32495		2519	14839
171	0072	0890	B			32624		2535	14836
171	0096	0858				33441		2615	14809
171	0121	0749				33705		2635	14816
171	0145	0748				33811		2647	14813
171	0169	0726				33890		2656	14810
171	0193	0705				33946		2667	14797
171	0241	0652				33971		2674	14791
171	0289	0616				34029		2687	14782
177	0484	0491				34069		2697	14774
177	0582	0448				34173		2710	14773
177	0779	0392				34277		2724	14784
177	0976	0352				34387		2737	14802
177	1171	0311				34452		2746	14818
177	1470	0255				34517		2756	14845
177	1975	0194				34599		2768	14905

## I N T E R P O L A T E D

DEPTH	T	E	M	P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0880	B			32437		2517	14826	0000	00000	2808
0010	0889	B			32429		2515	14831	0028	00001	2829
0020	0891				32470		2518	14834	0057	00006	2803
0030	0892				32492		2519	14837	0085	00013	2790
0050	0892				3248	D	2518	14839	0141	00036	2802
0075	0889	B			3244	I	2516	14842	0212	00082	2831
0100	0839	B			3276	H	2548	14831	0279	00142	2529
0125	0746	B			3351	C	2620	14809	0334	00204	1843
0150	0744				33735		2638	14816	0379	00266	1676
0175	0721				33834		2649	14812	0420	00334	1574
0200	0697				33903		2658	14808	0458	00408	1494
0225	0670				3394	B	2664	14801	0495	00489	1436
0250	0644				33952		2669	14796	0531	00576	1396
0300	0608				33978		2676	14790	0600	00770	1337
0400	0543				34033		2688	14781	0729	01232	1227

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0500	0483	34085		2699	14773	0848	01779	1127
0600	0442	34185		2712	14774	0956	02388	1015
0700	0411	3424 B		2720	14778	1055	03048	0945
0800	0387	34290		2726	14786	1148	03763	0892
1000	0347	34397		2738	14803	1318	05321	0782
1200	0305	34459		2747	14820	1468	07015	0702
1500	0252	3453 B		2757	14848	1667	09761	0606
2000	0192	34601		2768	14908	1950	14794	0506

C-REF-NO 006 YR 1964 DEPTH C 1298 WAVES 1 49XX AIR T 08.8 VIS 97  
 CONS. NO 019 MONTH 1 MXSAMPC 12 WAVES 2 49X3 WET B 08.3 STN 001  
 LAT 48-43ON DAY 15 NO.DPTH 19 WND-DIR 990 WW-CODE 02  
 LON 126-44OW HR 21.8 W-COLOR 40 WND-SPD 02 CLD-TPE 6  
 MARSD SQ 157 W-TRNSP 08 BARO 1013. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND
218	CC00	097	B	32335	2494	14859
218	C010	0974	B	32301	2491	14861
218	0020	0968		32343	2495	14861
218	0030	0920		32371	2505	14846
218	0050	0898		32377	2509	14841
218	0075	0868	B	33162	2575	14844
218	0099	0846		33428	2599	14843
218	0124	0790		33646	2625	14828
218	0149	0758		33779	2640	14822
218	0174	0757		33899	2649	14827
218	0199	0749		33946	2654	14828
218	0249	C674		33942	2664	14807
218	0298	C652		34004	2672	14807
218	0398	0562		34C63	2688	14788
223	0493	0502		34120	2700	14780
223	0591	0460		34184	2710	14780
223	0786	0452		34294	2719	14811
223	0978	C354		34473	2744	14804
223	1164	0314		34527	2752	14819

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
CC00	0970	B	32335	2494	14859	0000	00000	3019
0010	0974	B	32301	2491	14861	0031	00002	3053
0020	0968		32343	2495	14861	0061	00006	3014
C030	0920		32371	2505	14846	0091	00014	2922
0050	0898		32377	2509	14841	0149	00038	2888
C075	0868	B	33162	2575	14844	0214	00078	2265
0100	0844		33438	2600	14842	0268	00126	2029
0125	0788		33652	2625	14828	0316	00182	1794
0150	0758		33785	2640	14822	0360	00243	1657
0175	0757		33902	2650	14827	0400	00310	1573
0200	0748		33946	2654	14828	0440	00386	1531
C225	0712	C	3395 C	2660	14818	0478	00468	1484
0250	0673		33943	2664	14807	0514	00558	1440
0300	C650		34006	2672	14807	0585	00758	1371
0400	0561		34C64	2688	14788	0716	01225	1225
0500	0498		34125	2701	14780	0834	01768	1116
C600	0460		34189	2710	14781	0943	02380	1033

DEPTH	T	E	M	P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0700	0455	D	3424	B			2715	14797	1046	03064	0997
0800	0445		34308				2721	14810	1144	03821	0947
1000	0371	H	3445	G			2740	14815	1318	05411	0770

## SECTION IV

### Bathythermograms



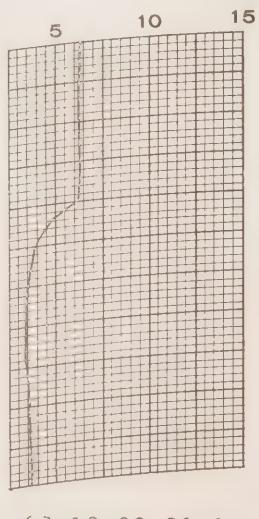
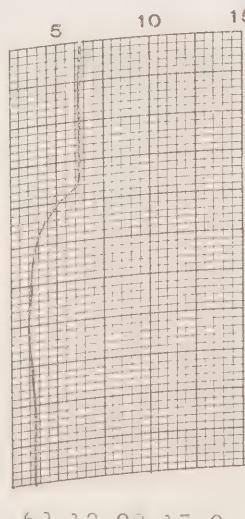
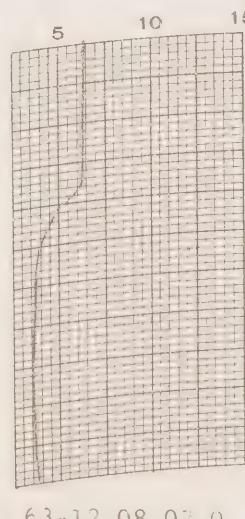
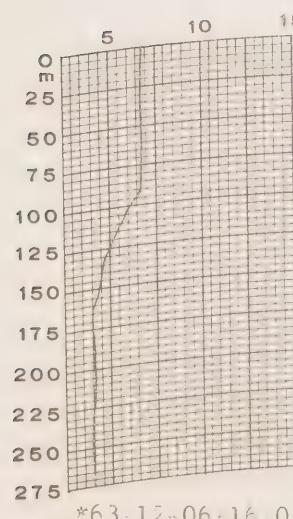
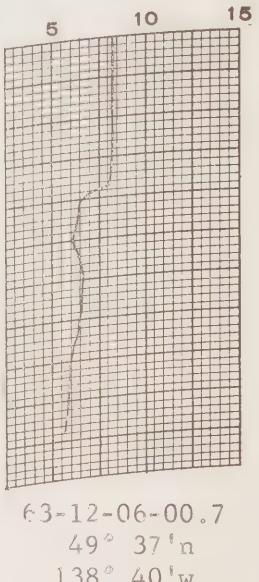
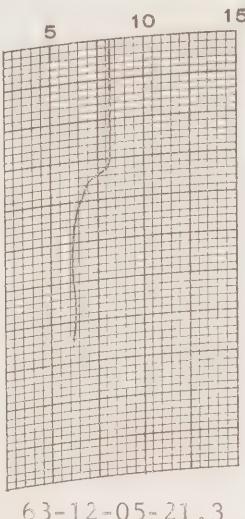
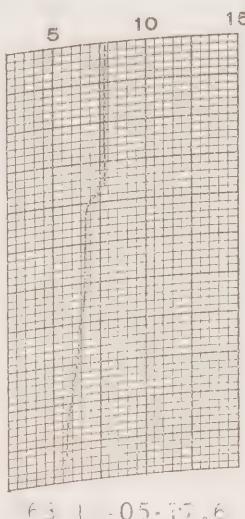
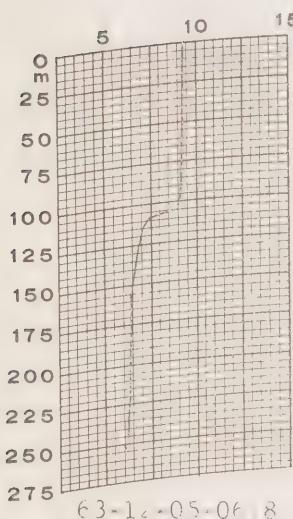
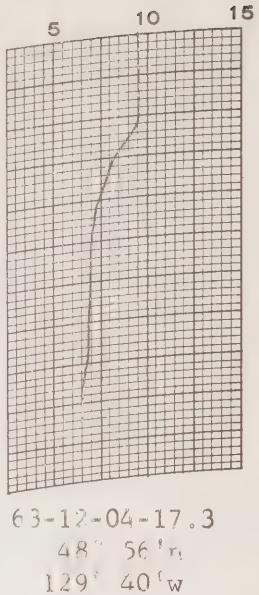
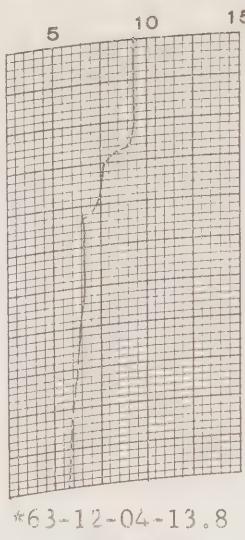
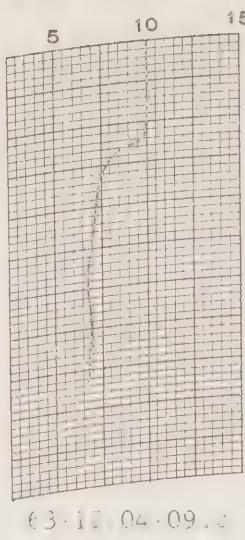
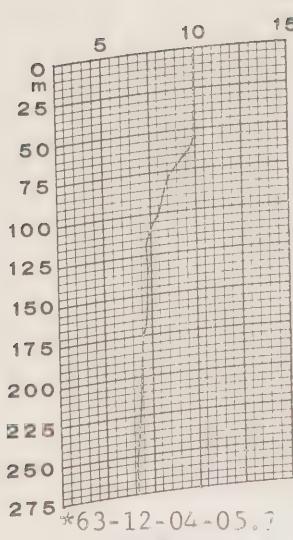
C . C , G . S . "ST . CATHARINES"

Daily bathythermograms

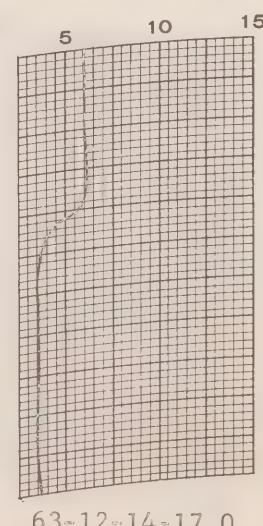
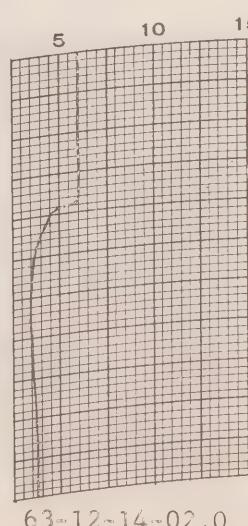
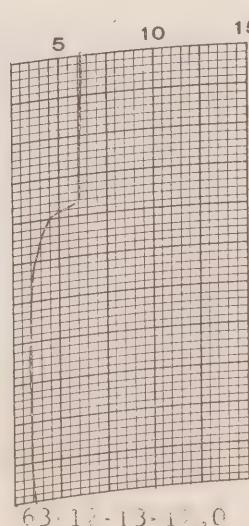
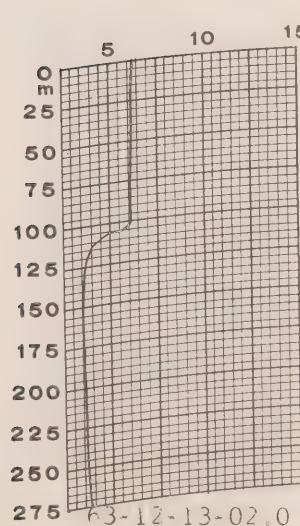
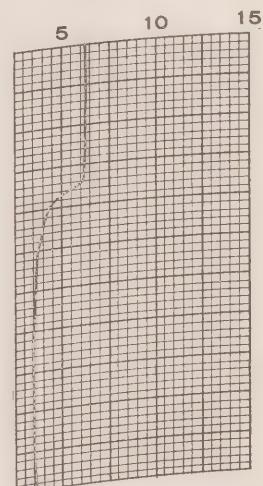
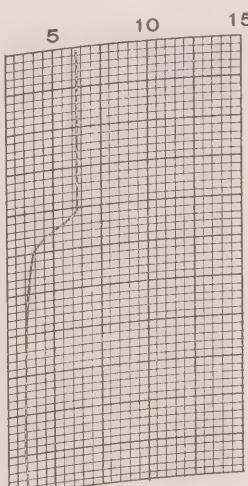
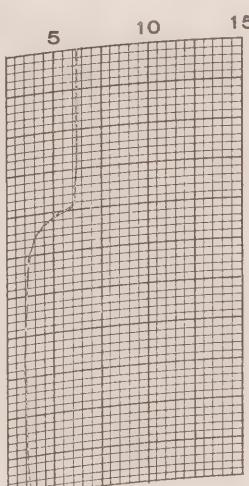
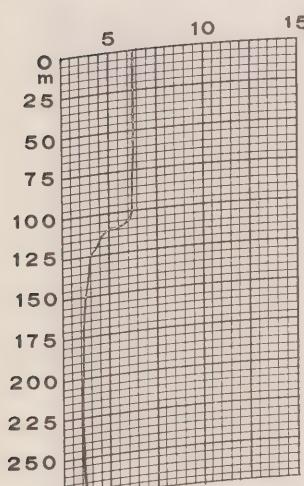
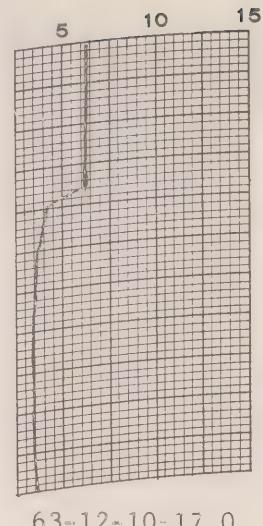
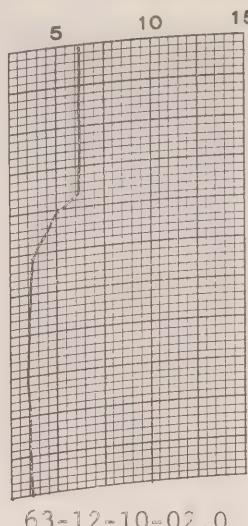
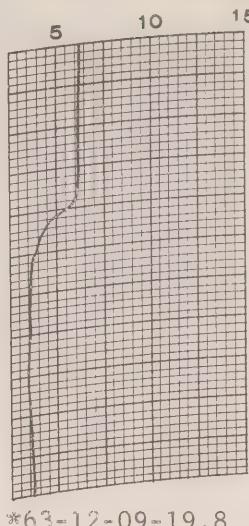
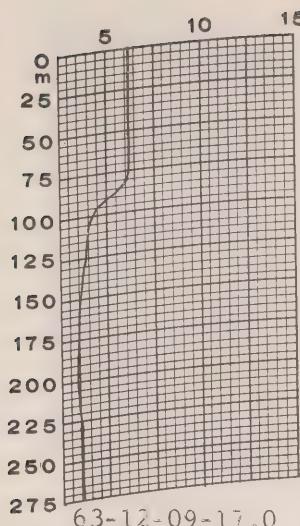
and

OCEAN series bathythermograms

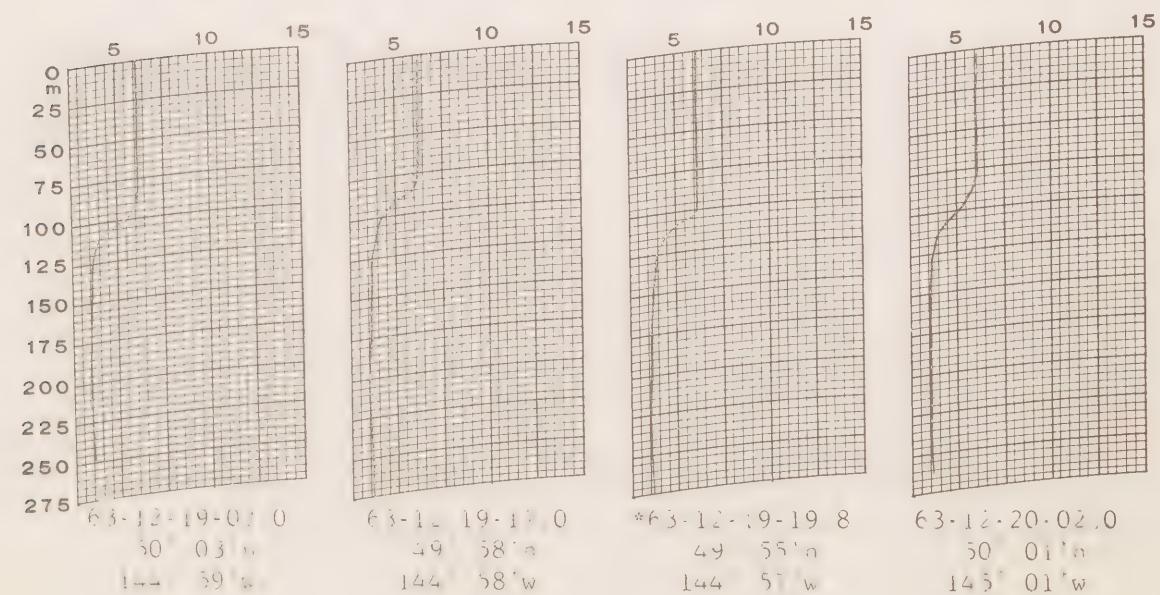
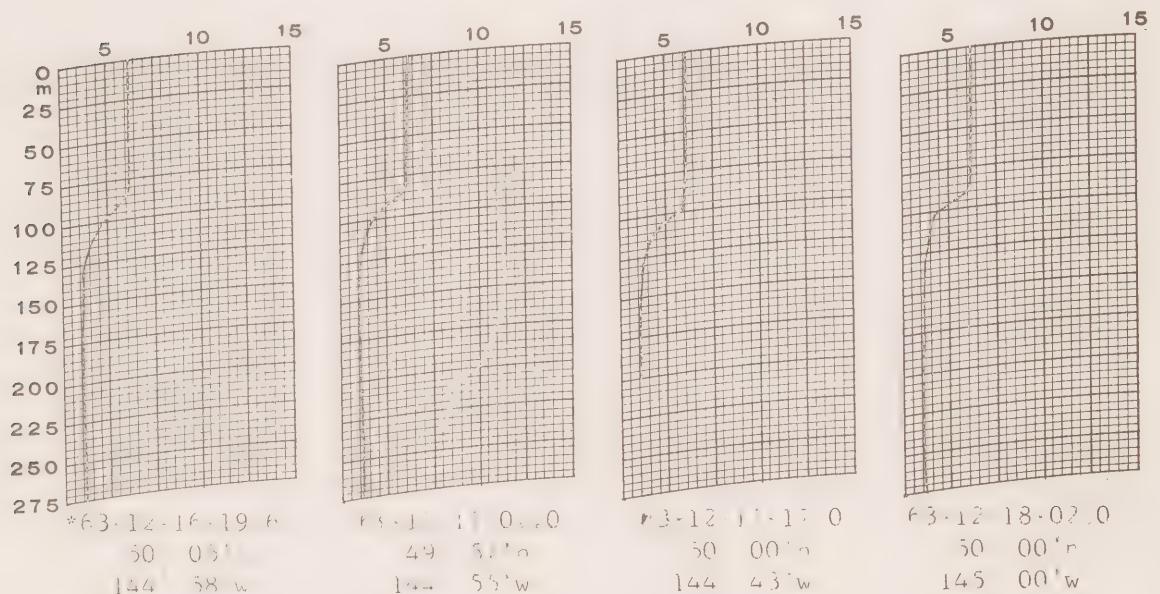
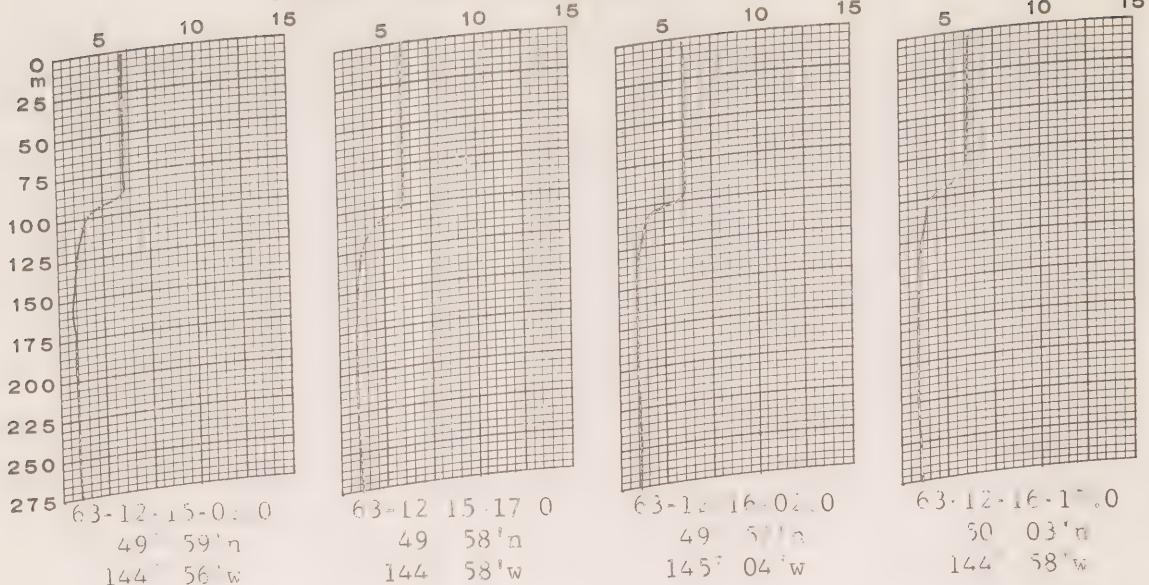
## C.C.C. S. "St. Catharines" Survey P-63-5



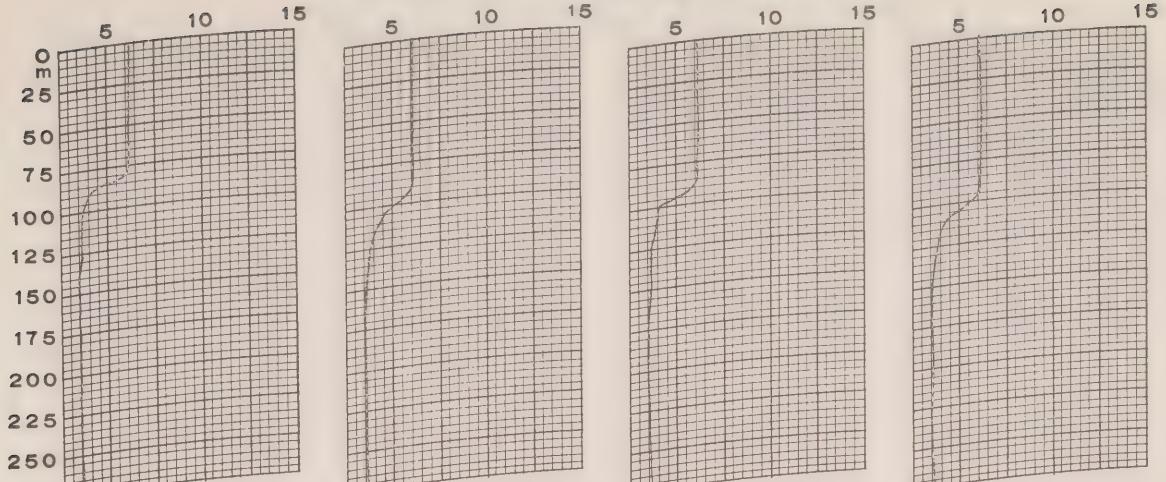
## C.C.G.S. "St. Catharines", Survey E-63-5



## C.C.G.S. "St. Catharines", Survey P-63-5



C.C.S.S. "St. Catherine's", Survey, P-63-5



63-12-20-17.0

$49^{\circ} 59' n$   
 $145^{\circ} 01' w$

63-12-24-17.0

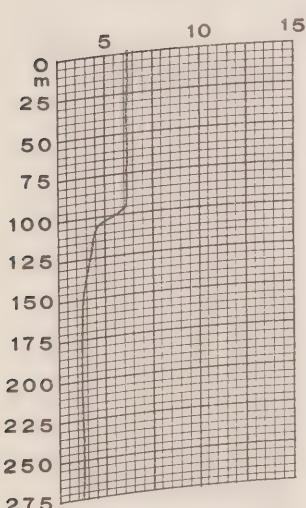
$50^{\circ} 00' n$   
 $145^{\circ} 02' w$

63-12-23-17.0

$50^{\circ} 00' n$   
 $145^{\circ} 00' w$

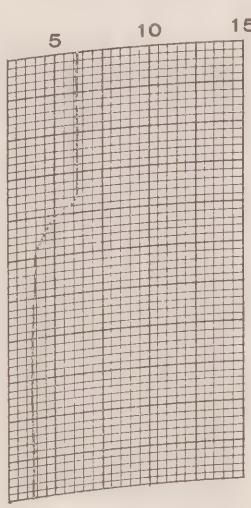
\*63-12-23-19.3

$50^{\circ} 01' n$   
 $145^{\circ} 00' w$



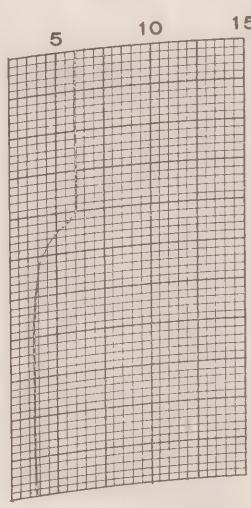
63-12-24-02.0

$49^{\circ} 57' n$   
 $145^{\circ} 00' w$



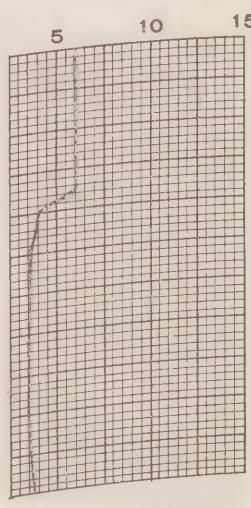
63-12-24-17.0

$49^{\circ} 59' n$   
 $144^{\circ} 59' w$



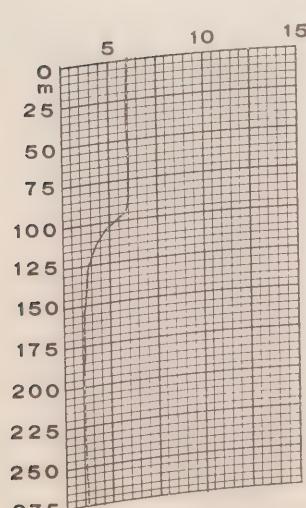
63-12-25-02.0

$49^{\circ} 56' n$   
 $144^{\circ} 54' w$



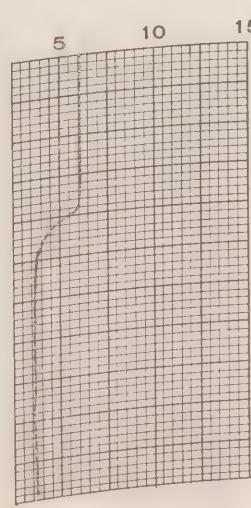
63-12-25-17.0

$50^{\circ} 02' n$   
 $144^{\circ} 57' w$



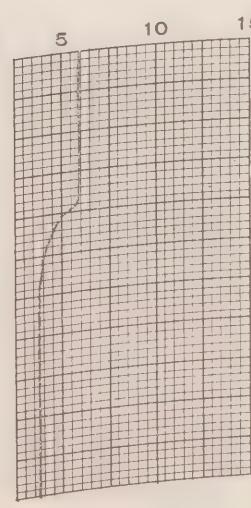
63-12-26-02.0

$49^{\circ} 55' n$   
 $145^{\circ} 02' w$



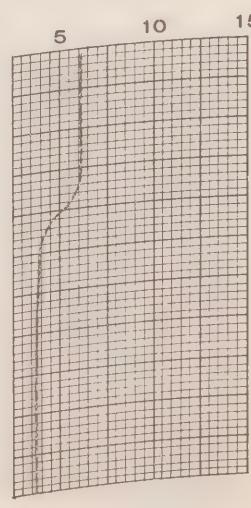
63-12-26-17.0

$50^{\circ} 00' n$   
 $145^{\circ} 01' w$



63-12-28-17.0

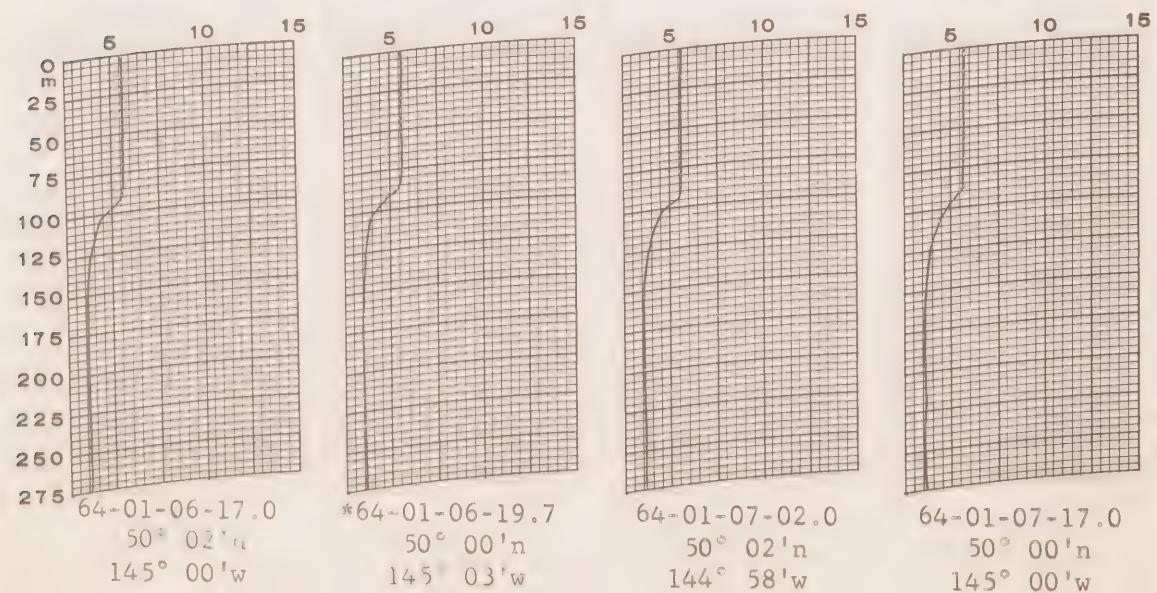
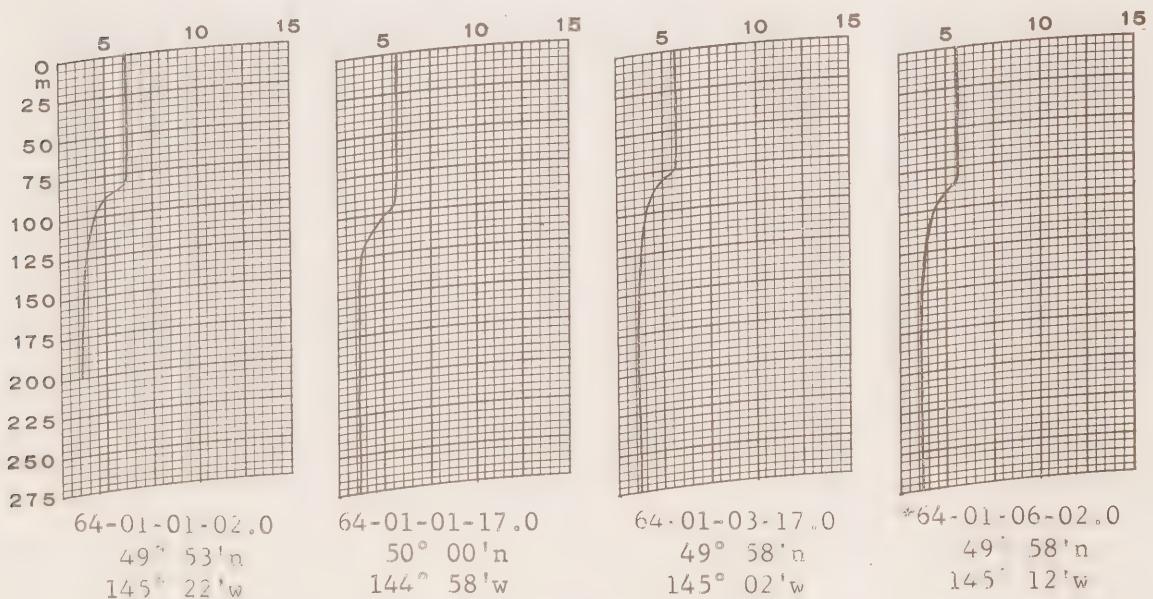
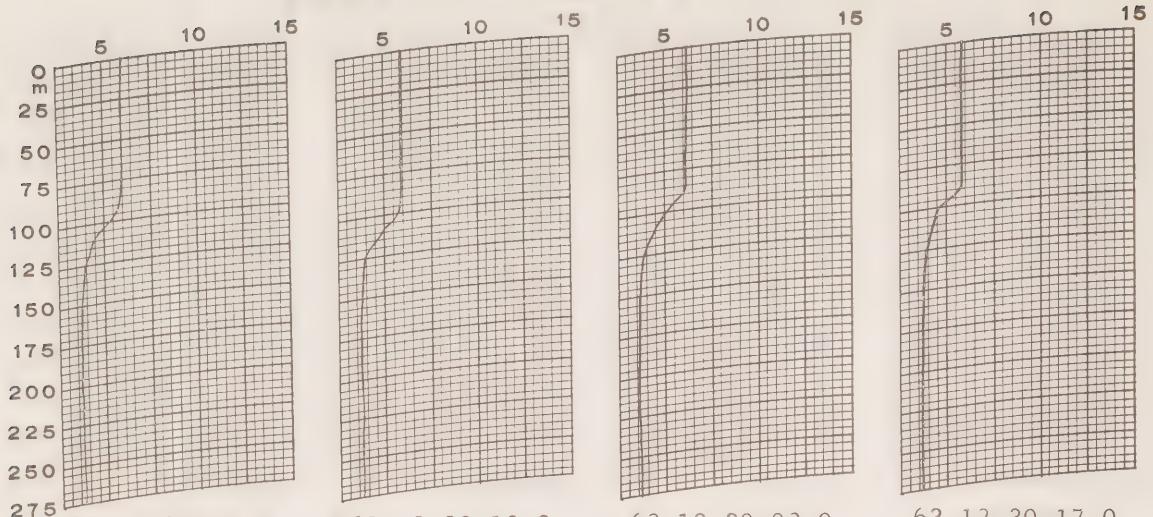
$50^{\circ} 00' n$   
 $145^{\circ} 00' w$



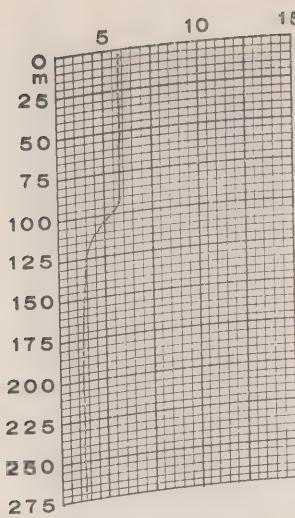
63-12-29-02.0

$50^{\circ} 00' n$   
 $144^{\circ} 58' w$

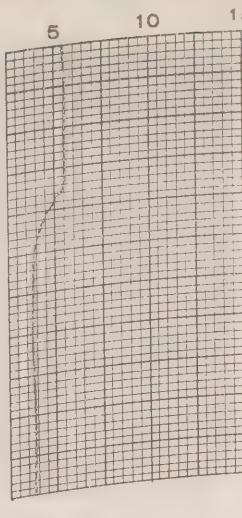
## C.C.G.S. "St. Catharines" Survey P-63-5



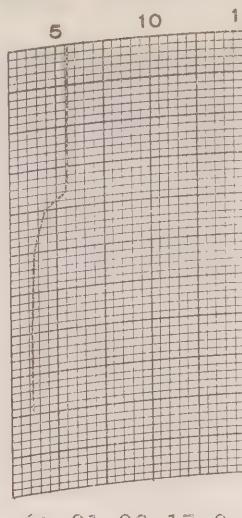
## C.C.G.S. "St. Catharines", Survey P-63-5



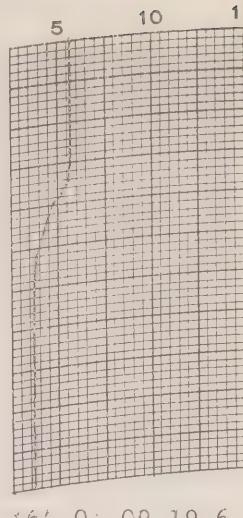
64-01-08-02.0  
50° 00' n  
144° 52' w



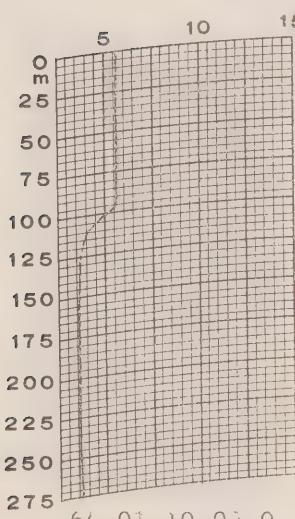
64-01-08-17.0  
49° 59' n  
145° 01' w



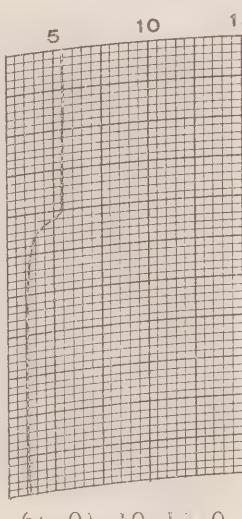
64-01-09-17.0  
50° 00' n  
144° 57' w



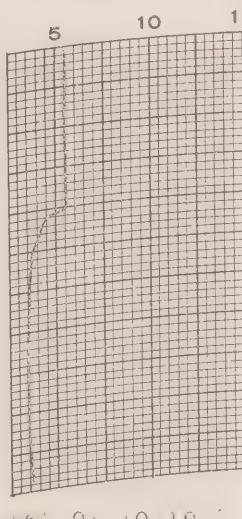
64-01-09-19.6  
49° 54' n  
145° 05' w



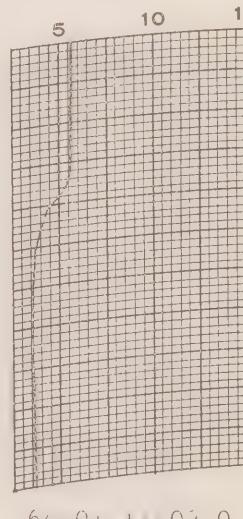
64-01-10-02.0  
50° 01' n  
144° 57' w



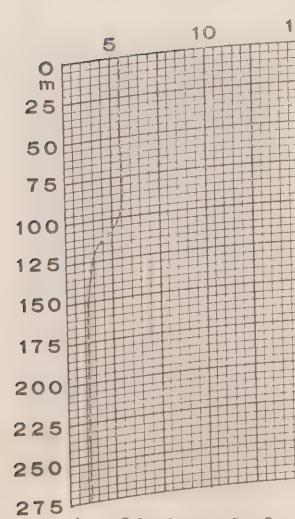
64-01-10-11.0  
50° 00' n  
144° 57' w



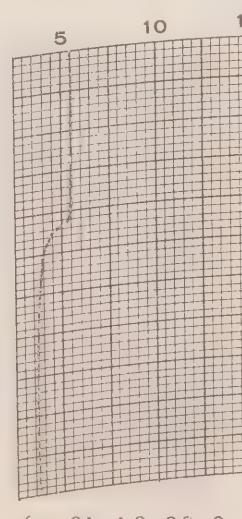
64-01-10-19.1  
49° 59' n  
145° 02' w



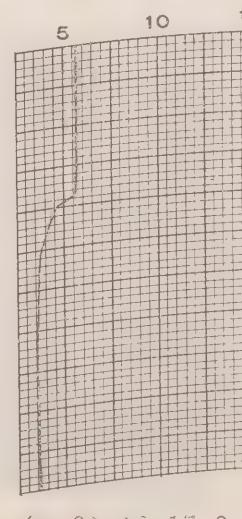
64-01-11-02.0  
50° 00' n  
145° 00' w



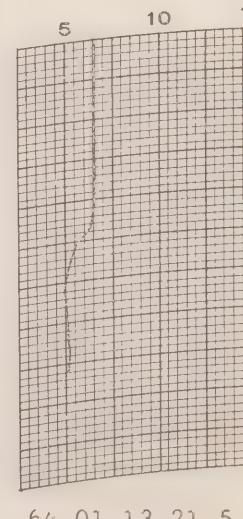
64-01-11-17.0  
50° 00' n  
145° 00' w



64-01-12-02.0  
49° 58' n  
144° 58' w

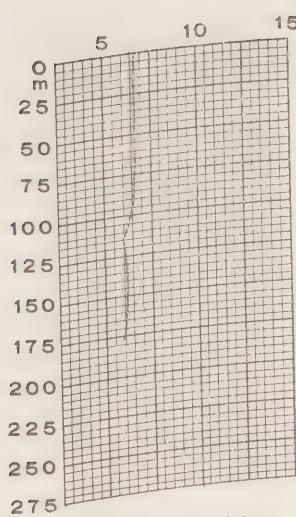


64-01-12-17.0  
50° 02' n  
144° 59' w

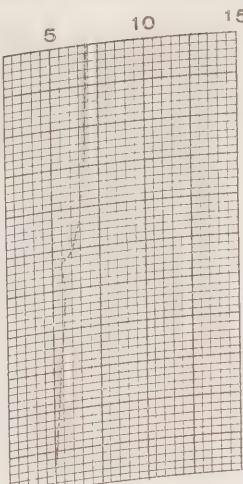


64-01-13-21.5  
49° 43' n  
140° 40' w

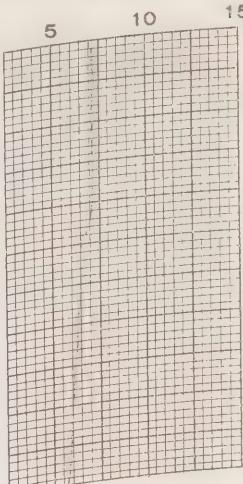
## C C G S "St Catharines", Survey P-63-5



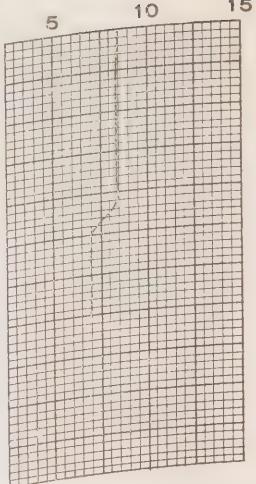
64-01-14-00.4  
 $49^{\circ} 37' n$   
 $139^{\circ} 40' w$



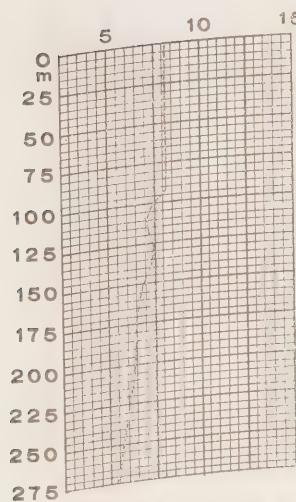
\*64-01-14-04.8  
 $49^{\circ} 36' n$   
 $138^{\circ} 40' w$



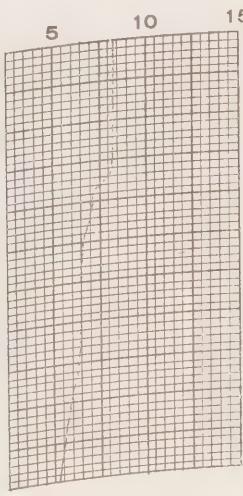
64-01-14-08.0  
 $49^{\circ} 30' n$   
 $137^{\circ} 40' w$



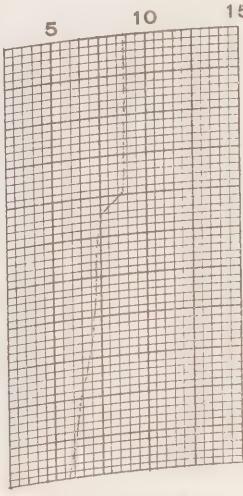
64-01-15-01.6  
 $49^{\circ} 07' n$   
 $131^{\circ} 40' w$



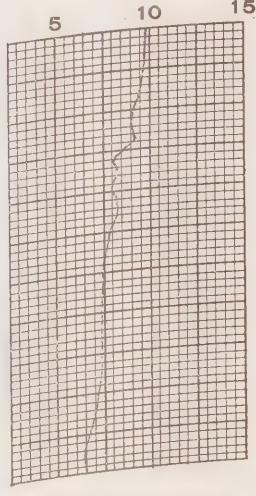
\*64-01-15-06.0  
 $49^{\circ} 01' n$   
 $130^{\circ} 40' w$



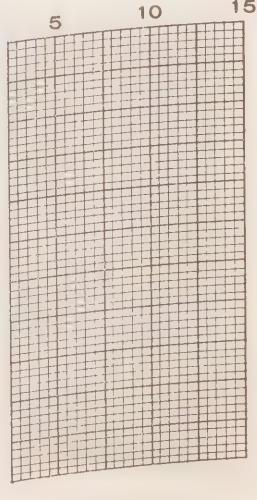
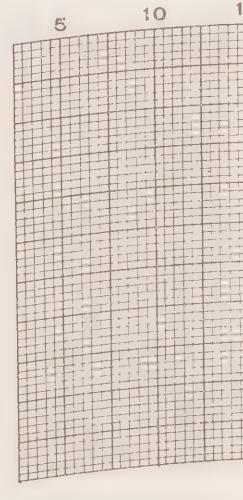
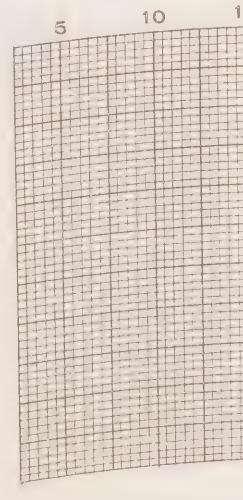
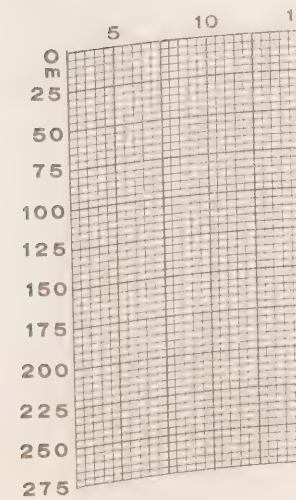
\*64-01-15-13.0  
 $48^{\circ} 51' n$   
 $128^{\circ} 40' w$



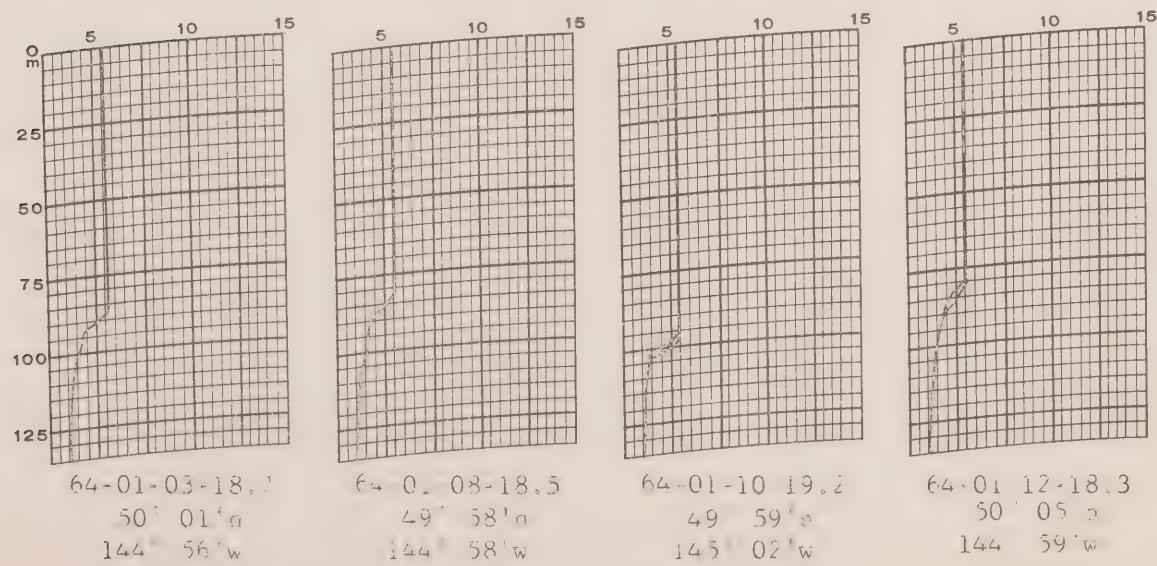
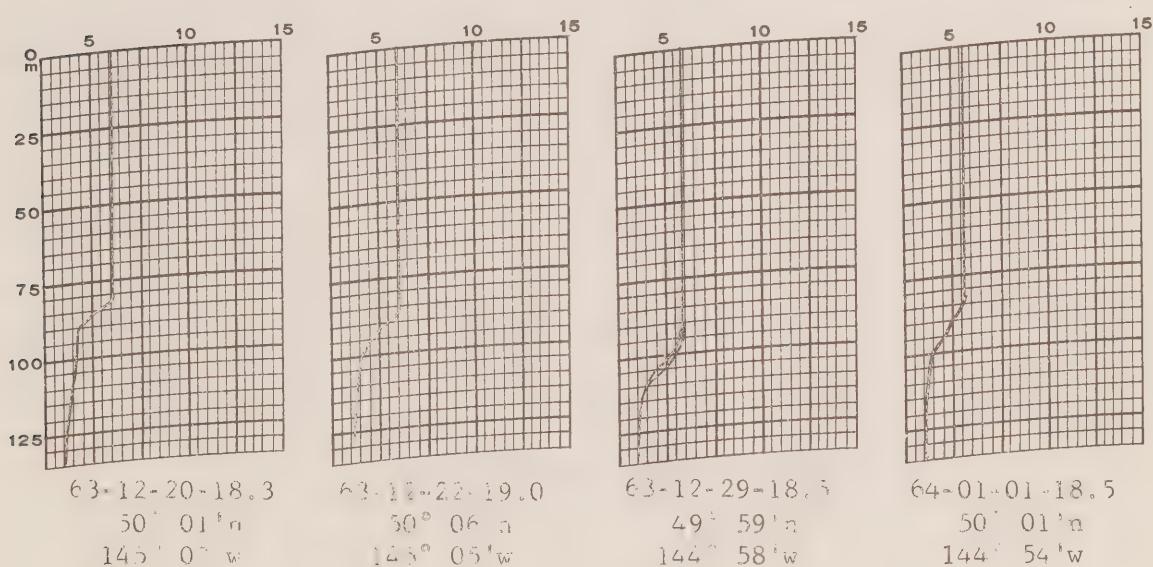
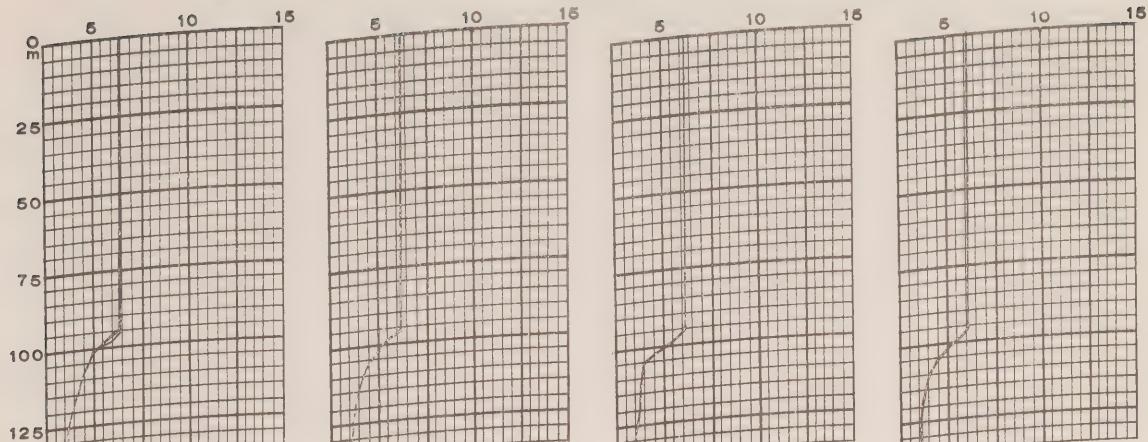
\*64-01-15-17.7  
 $48^{\circ} 46' n$   
 $127^{\circ} 40' w$



\*64-01-15-21.9  
 $48^{\circ} 43' n$   
 $126^{\circ} 40' w$



## C.C.G.S. "St. Catharines", Survey P-63-5, OCEAN Series





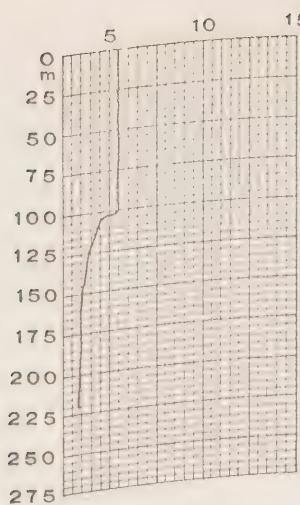
C. C. G. S. "STONETOWN" Patrol No. 59

Daily bathythermograms

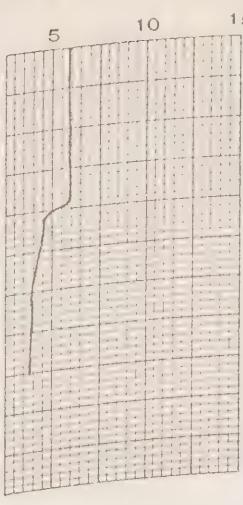
and

OCEAN series bathythermograms

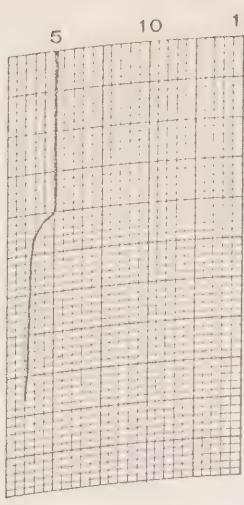
## C.C.G.S. "Stonetown", Patrol No. 59



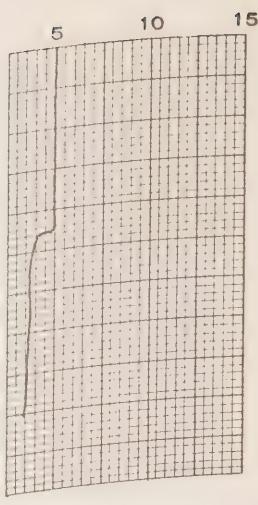
64-01-14-17.0  
50°00' n  
144°57' w



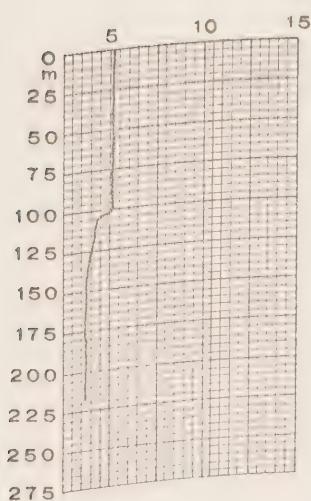
64-01-16-02.0  
50°10' n  
144°58' w



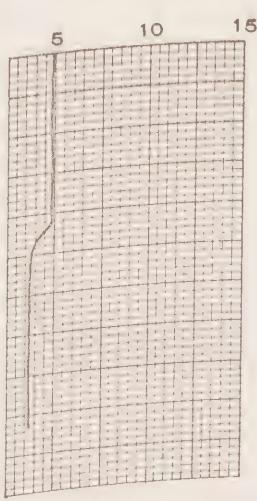
64-01-18-17.0  
49°55' n  
144°20' w



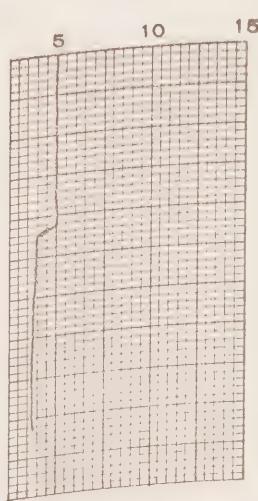
64-01-19-02.0  
49°45' n  
144°59' w



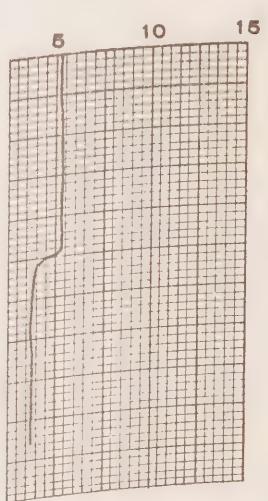
64-01-19-17.0  
49°52' n  
145°00' w



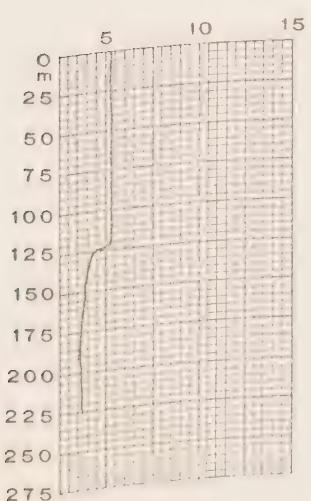
64-01-21-02.0  
49°40' n  
145°08' w



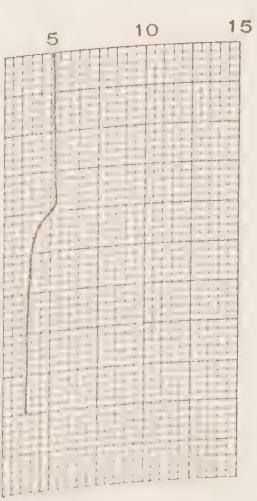
64-01-21-17.0  
50°10' n  
145°30' w



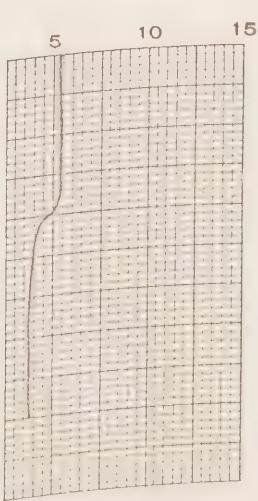
64-01-22-02.0  
50°10' n  
144°55' w



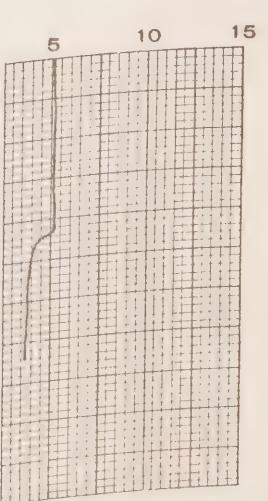
64-01-22-17.0  
50°20' n  
145°15' w



64-01-23-02.0  
49°55' n  
145°05' w

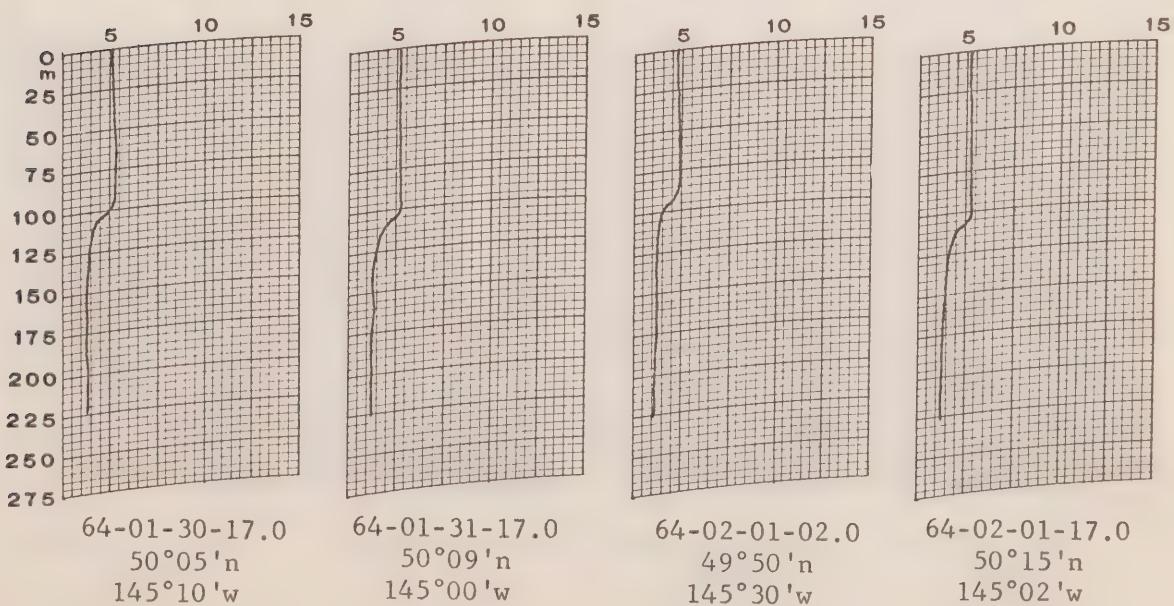
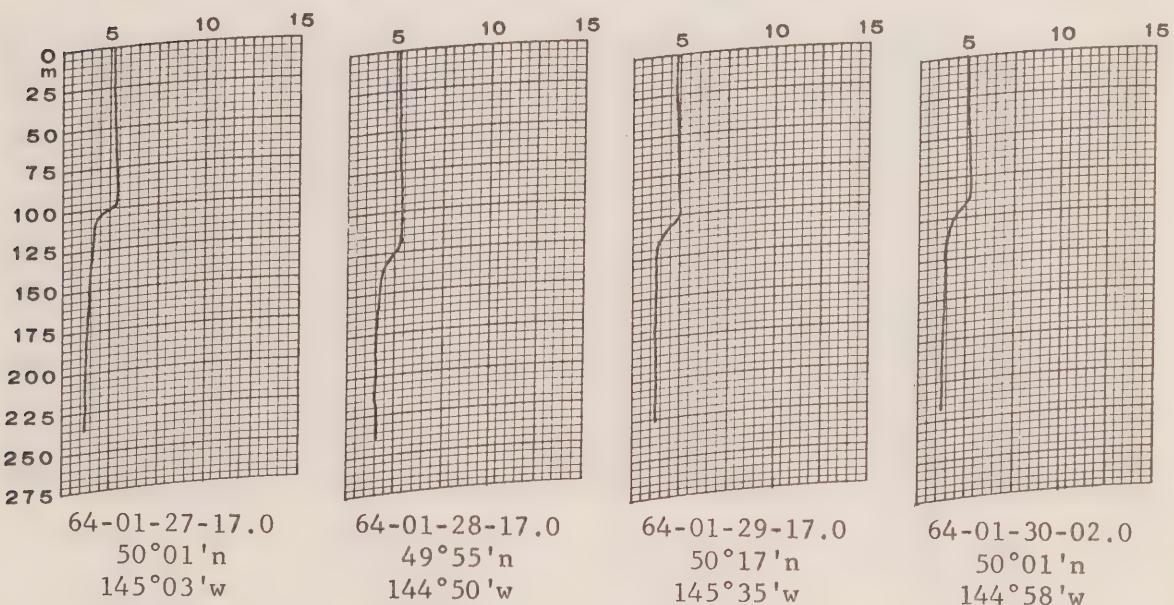
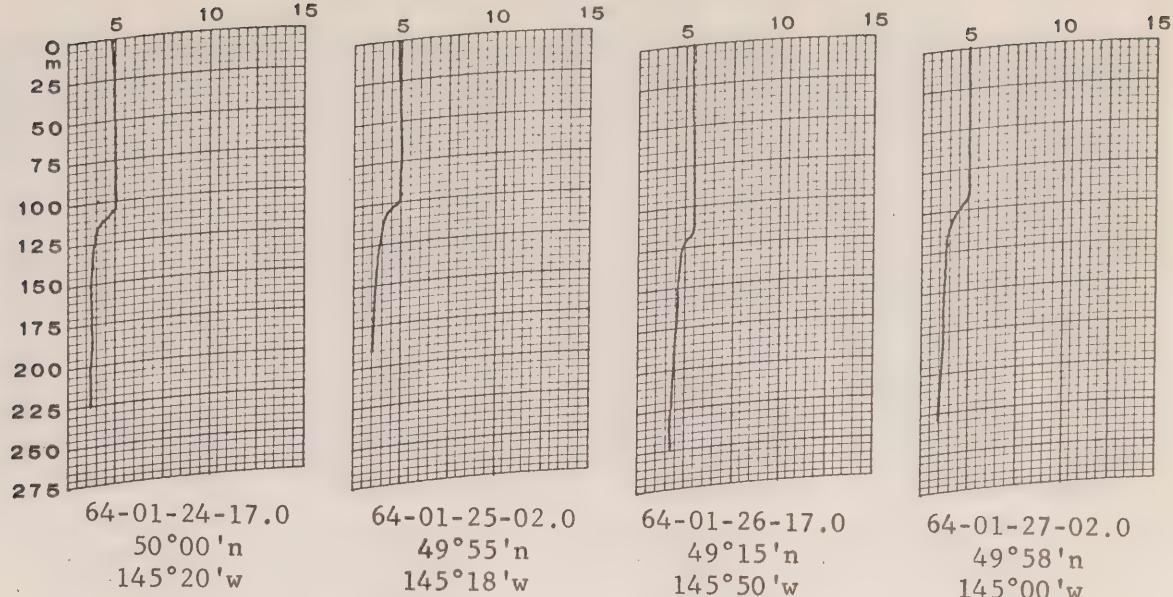


64-01-23-17.0  
49°12' n  
145°03' w

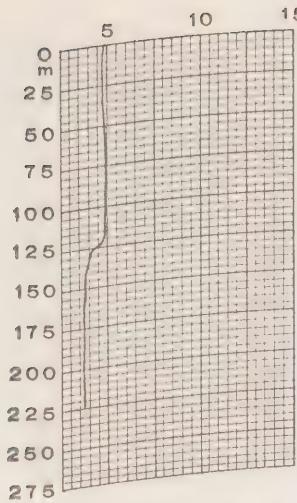


64-01-24-02.0  
50°06' n  
145°10' w

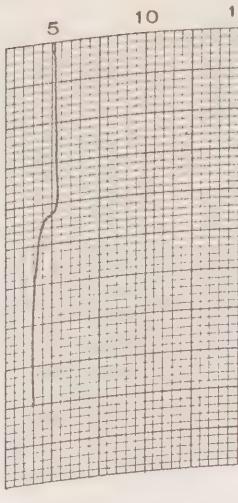
## C.C.G.S. "Stonetown", Patrol No. 59



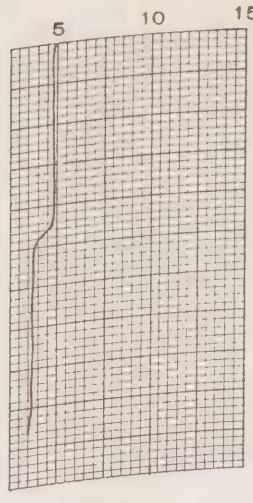
## C.C.G.S. "Stonetown", Patrol No. 59



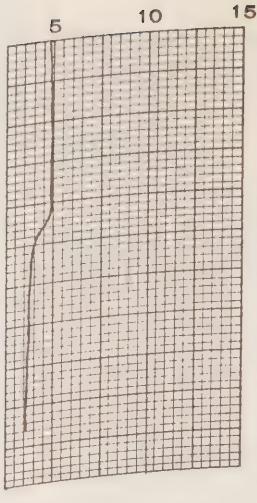
64-02-02-02.0  
49°55'n  
145°15'w



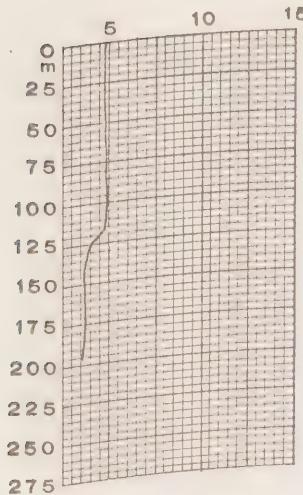
64-02-02-17.0  
49°50'n  
145°15'w



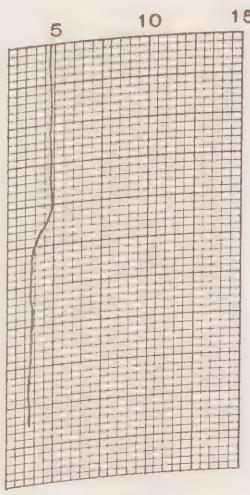
64-02-03-02.0  
49°47'n  
145°24'w



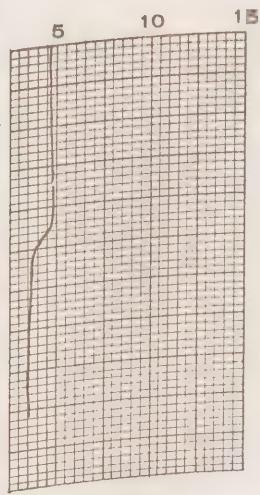
64-02-03-17.0  
49°50'n  
145°15'w



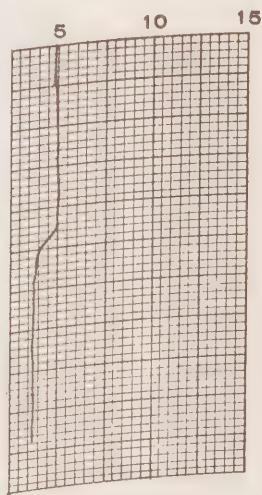
64-02-04-02.0  
49°43'n  
145°12'w



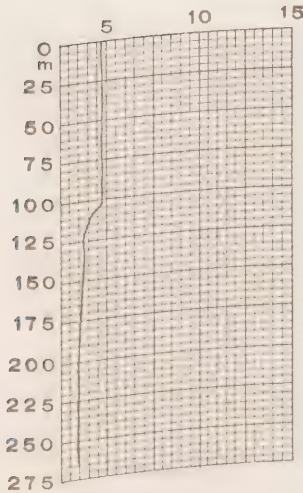
64-02-04-17.0  
49°55'n  
145°05'w



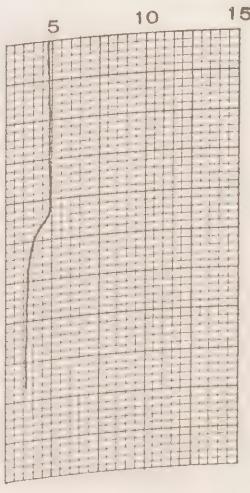
64-02-05-02.0  
50°10'n  
145°05'w



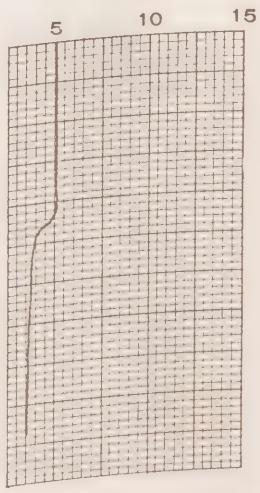
64-02-06-17.0  
49°55'n  
145°00'w



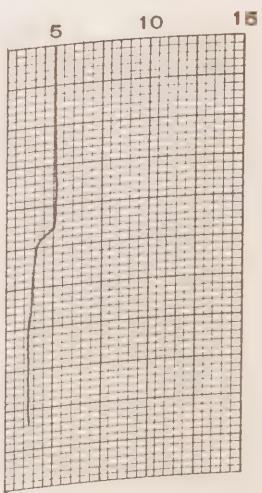
64-02-07-02.0  
50°00'n  
145°02'w



64-02-07-17.0  
49°58'n  
145°00'w

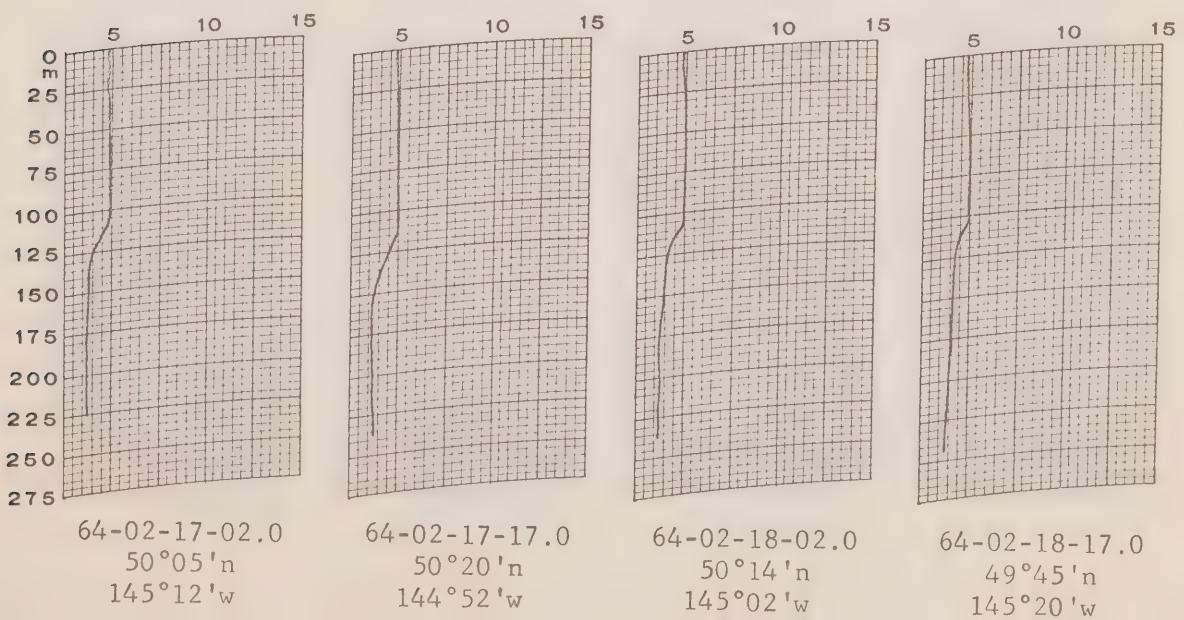
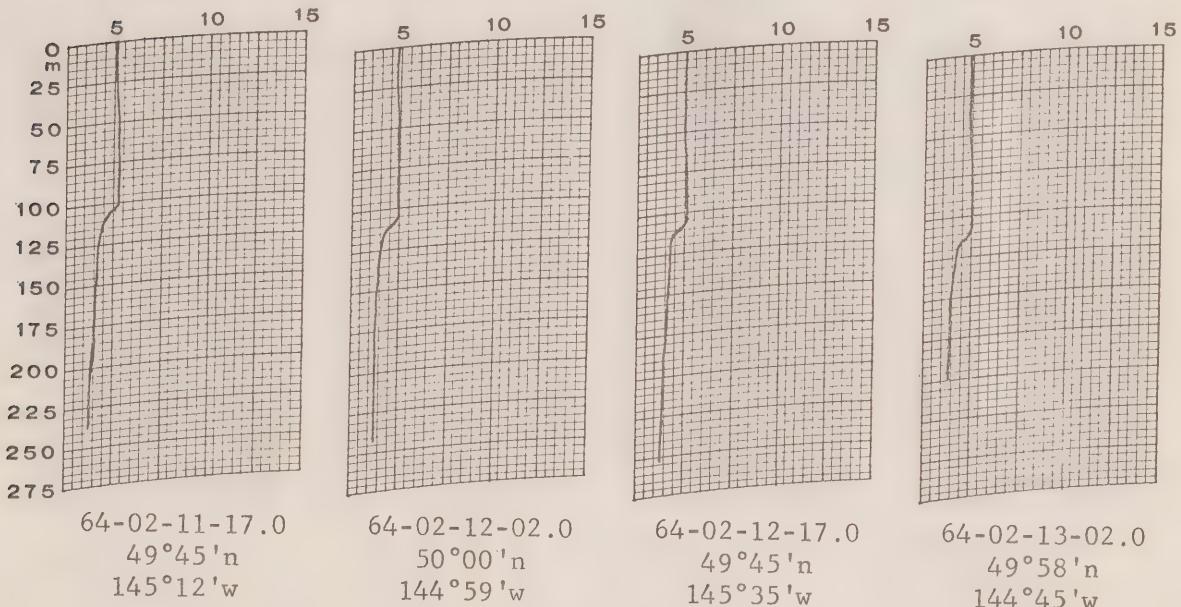
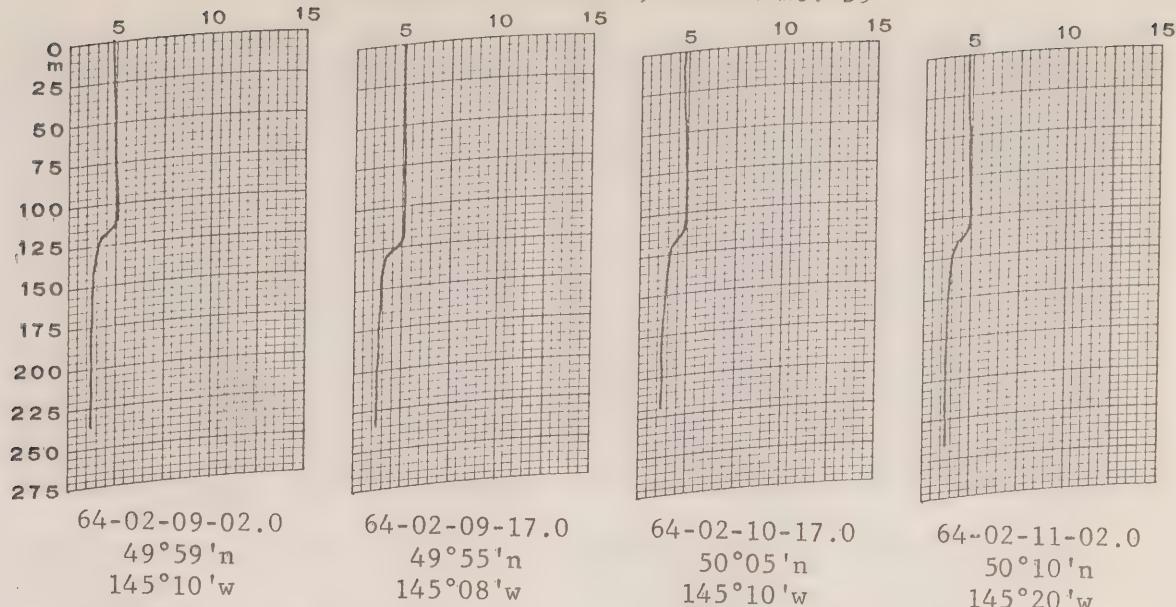


64-02-08-02.0  
50°10'n  
144°30'w

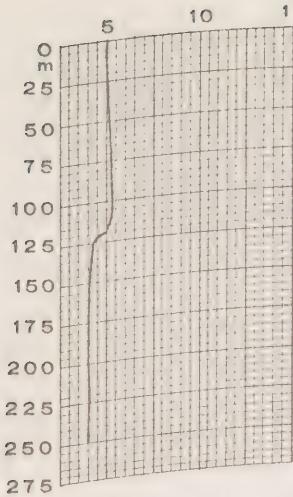


64-02-08-17.0  
49°55'n  
145°10'w

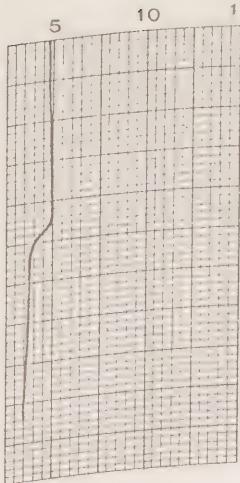
## C.C.G.S. "Stonetown", Patrol No. 59



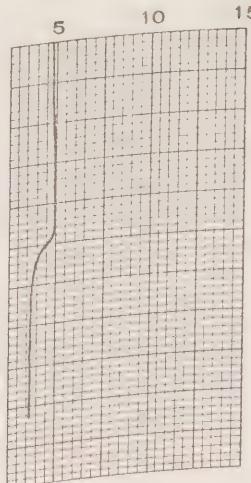
C.C.G.S. "Stonetown", Patrol No. 59



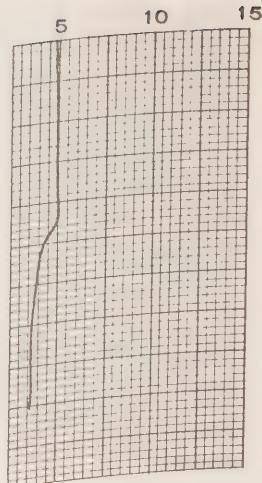
64-02-20-17.0  
49°50'N  
144°55'W



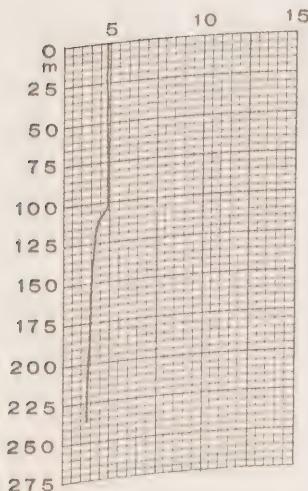
64-02-21-02.0  
49°42' n  
145°10' w



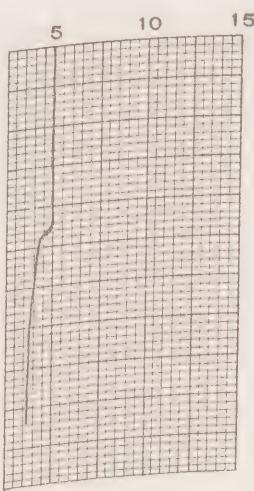
64-02-21-17.0  
50°05' n  
144°59' w



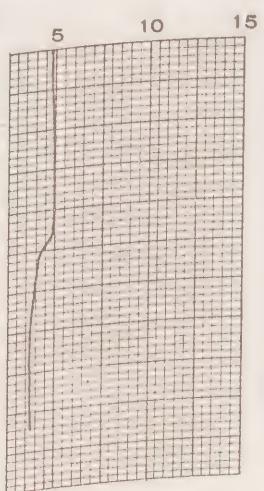
64-02-22-02.0  
49°55'N  
145°00'W



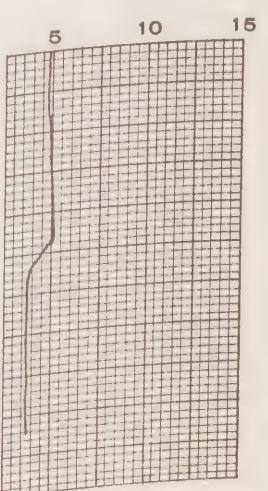
64-02-22-17.0  
49°40' n  
145°20' w



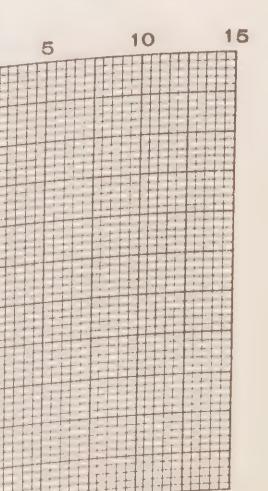
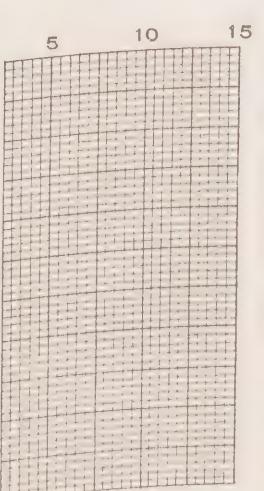
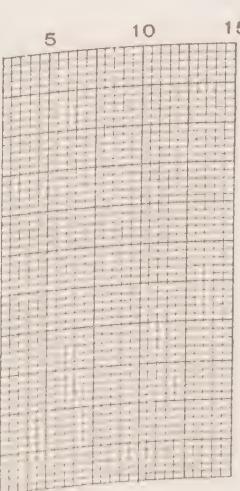
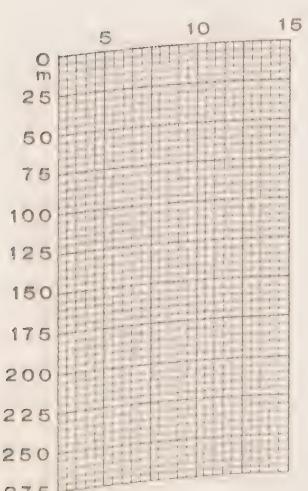
64-02-23-02.0  
49°53'N  
145°05'W



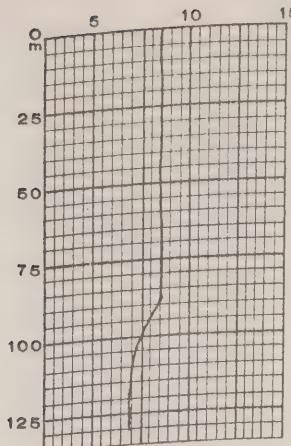
64-02-23-17.0  
50°00'N  
145°10'E



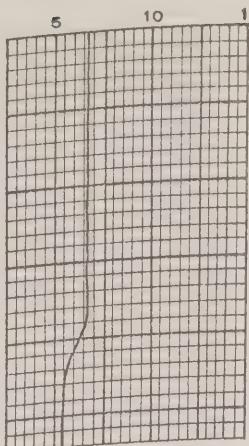
64-02-24-02.0  
50°05' n  
144°40' w



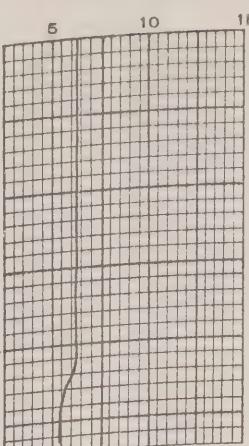
## C.C.G.S. "Stonetown", Patrol No. 59, OCEAN Series



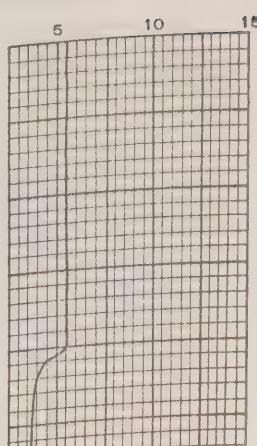
64-01-11-13.2  
48°41'n  
128°40'w



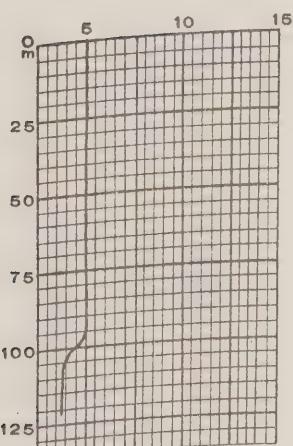
64-01-12-15.5  
49°58'n  
136°40'w



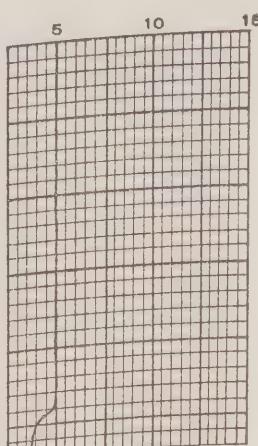
64-01-13-07.0  
49°52'n  
140°39'w



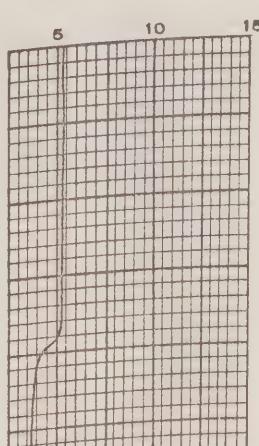
64-01-14-18.2  
49°57'n  
145°02'w



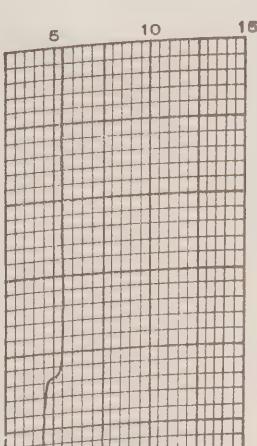
64-01-18-17.8  
49°50'n  
145°25'w



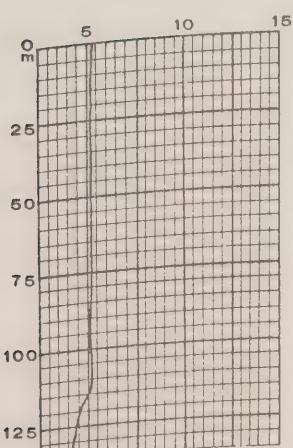
64-01-21-17.7  
50°15'n  
145°35'w



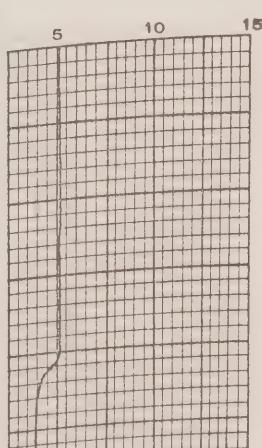
64-01-23-17.7  
50°15'n  
145°05'w



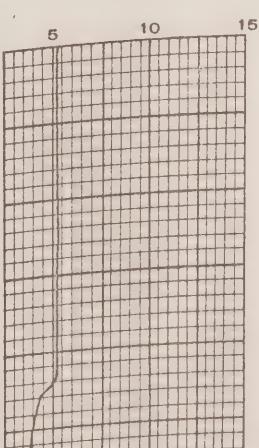
64-01-26-18.2  
49°10'n  
145°49'w



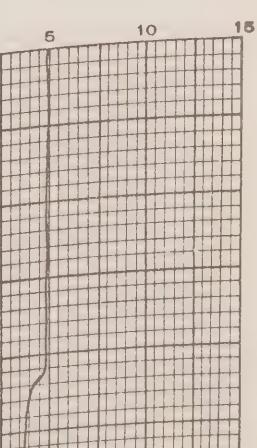
64-01-28-17.8  
50°00'n  
144°56'w



64-01-30-17.2  
50°10'n  
145°12'w

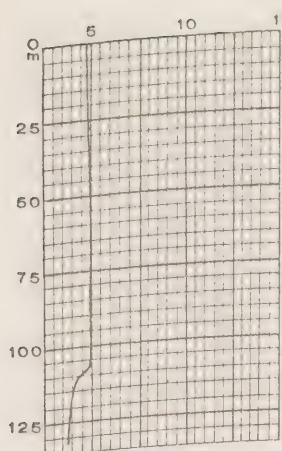


64-02-01-17.5  
50°05'n  
145°06'w

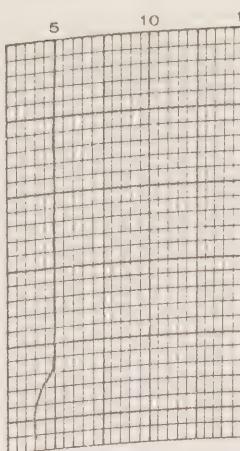


64-02-03-17.3  
49°48'n  
145°21'w

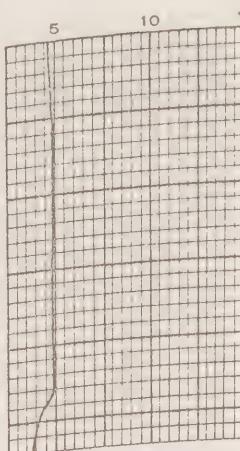
## C.C.G.S. "Stonetown", Patrol No. 59, OCEAN Series



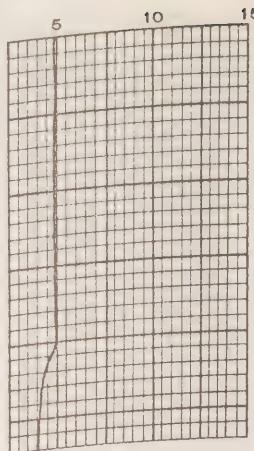
64-02-06-17.5  
49°55' n  
145°00' w



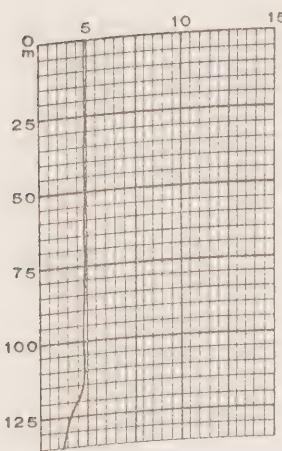
64-02-08-17.3  
50°00' n  
145°12' w



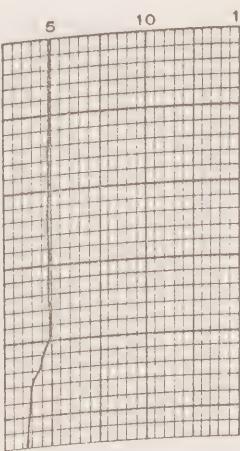
64-02-10-17.7  
50°10' n  
145°15' w



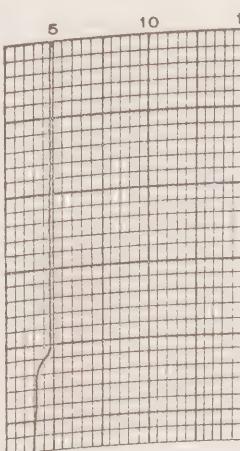
64-02-12-17.3  
49°40' n  
145°41' w



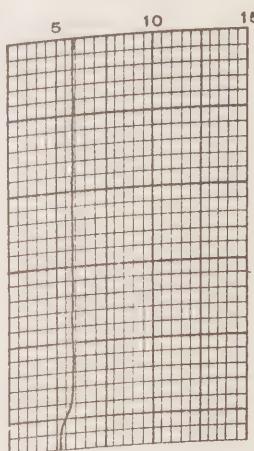
64-02-17-17.7  
50°20' n  
144°52' w



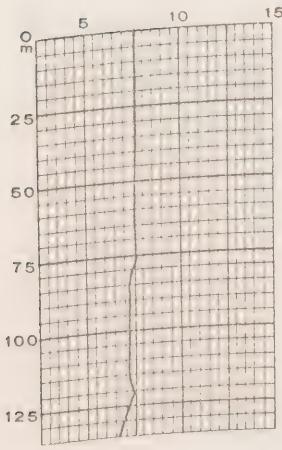
64-02-20-17.7  
49°48' n  
145°06' w



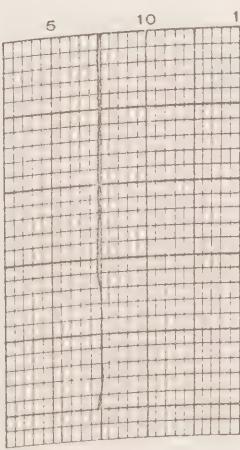
64-02-22-17.3  
49°40' n  
145°22' w



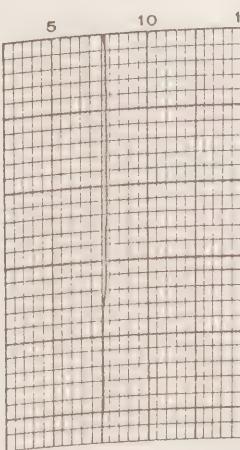
64-02-24-16.5  
49°51' n  
140°39' w



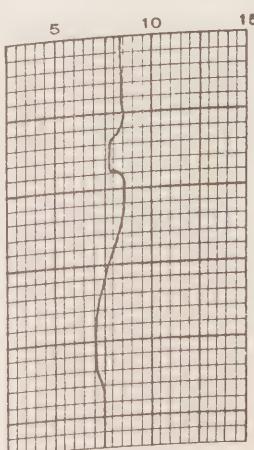
64-02-25-18.8  
49°06' n  
132°42' w



64-02-26-02.0  
48°59' n  
130°41' w



64-02-26-07.5  
48°49' n  
128°41' w



64-02-26-14.5  
48°38' n  
126°45' w

## ...SECTION V

Surface Salinity Data



Surface S % at Ocean Station "P"  
Cruise P-63-5

Date-Time	Position		Salinity
C.C.G.S. "St. Catharines", Survey P-63-5			
63-12-04-17.3	48°56' n	129°40' w	32.301
05-06.8	49°15'	133°40'	32.477
05-21.3	49°30'	137°40'	32.489
06-00.7	49°37'	138°40'	32.552
08-02.0	50°10'	145°03'	32.685
09	50°00'	145°00'	32.724
10	50°02'	145°01'	32.712
11	49°57'	144°58'	32.698
13	50°02'	144°58'	32.740
14	50°00'	145°02'	32.728
15	49°59'	144°56'	32.689
16	49°57'	145°04'	32.727
17	49°57'	144°55'	32.717
18	50°00'	145°00'	32.687
19	50°03'	144°59'	32.711
20	50°01'	145°01'	32.704
21	49°57'	144°57'	32.611
22	49°53'	145°03'	32.680
23	50°00'	145°15'	32.688
24	49°57'	145°00'	32.717
25	49°56'	144°54'	32.730
26	49°55'	145°02'	32.692
27	49°49'	145°00'	32.698
29	50°00'	144°58'	32.701
30	49°57'	144°53'	32.691
31	50°00'	145°13'	32.718
64-01-01-02.0	49°53'	145°22'	32.672
02	50°00'	144°47'	32.668
03	49°55'	145°23'	32.688
04	49°52'	145°05'	32.681
05	49°59'	145°07'	32.718
07	50°02'	144°58'	32.762
08	50°00'	144°52'	32.706
10	50°01'	144°57'	32.759
11	50°00'	145°00'	32.644
12	49°58'	144°58'	32.668
12	49°58'	145°15'	32.687
13-21.5	49°43'	140°40'	32.663
14-00.4	49°37'	139°40'	32.699
14-08.0	49°30'	137°40'	32.569
15-01.6	49°07'	131°40'	32.483
15-13.0	48°51'	128°40'	32.552

## Surface salinity observations, Ocean Weather Station "P"

Date - Time	Position		Salinity %.
C.C.G.S. "Stonetown", Patrol No. 59			
64-01-16-02.0	50°10'n.	144°58'w.	32.754
19-02.0	49°45'	144°59'	32.745
21-02.0	49°40'	145°08'	32.922
22-02.0	50°10'	144°55'	32.856
23-02.0	49°55'	145°05'	32.601
24-02.0	50°06'	145°10'	32.779
25-02.0	49°55'	145°18'	32.801
27-02.0	49°58'	145°00'	32.780
30-02.0	50°01'	144°58'	32.842
64-02-01-02.0	49°50'	145°30'	32.997
02-02.0	49°55'	145°15'	32.778
03-02.0	49°47'	145°24'	32.846
04-02.0	49°43'	145°12'	32.849
05-02.0	50°10'	145°05'	32.896
07-02.0	50°00'	145°02'	32.555
08-02.0	50°10'	144°30'	32.807
09-02.0	49°59'	145°10'	32.593
11-02.0	50°10'	145°20'	32.852
12-02.0	50°00'	144°59'	32.763
13-02.0	49°58'	144°45'	32.783
17-02.0	50°05'	145°12'	32.665
18-02.0	50°14'	145°02'	32.196
21-02.0	49°42'	145°10'	32.188
22-02.0	49°55'	145°00'	32.769
23-02.0	49°53'	145°05'	30.427
24-02.0	50°05'	144°40'	32.762

#### REFERENCES

Knudsen, K., 1901 Hydrographischen Tabellen. Copenhagen, 63 pp.

Ekman, V.W., 1908 Die Zusammendrückbarkeit des Meerwassers nebst einigen Werten für Wasser und Quecksilber. Publ. Circ. Cons. Explor. Mer., No. 43, 47 pp.

Strickland, J.D.H.  
MS, 1958 Standard methods of seawater analyses. Volume II. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 19, 78 pp.

Strickland, J.D.H. 1960 Measuring the production of marine phytoplankton. Bull. Fish. Res. Bd. Canada, No. 122, 172 pp.

Strickland, J.D.H., and  
T.R. Parsons, 1960 A manual of seawater analysis. Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.

Wilson, W.D., 1960 Equation for the speed of sound in seawater. Journ. Account. Soc., America 32 (10); p. 1357.

Rattray, M. Jr., 1962 Interpolation errors and oceanographic sampling. Deep-Sea Research. Vol. 9, pp 25 to 37.

Atlantic Oceanographic  
Group, MS, 1961 Canadian oceanographic research ships, 1961. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 90, 36 pp.

Brown, N.L., and  
B.V. Hamon, 1961 An inductive salinometer. Deep-Sea Research, Vol. 8, No. 1, pp. 65-75.

Giovando, L.F.  
MS, 1962 The OCEAN system of assessment of bathy-thermograms. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 105, 58 pp.

Sauer, C.D., and  
N.P. Fofonoff Oceans II, a computer program for processing oceanographic data (Publication pending).

Canadian Oceanographic  
Data Centre. 1964 Ocean Weather Station "P"-North Pacific Ocean. No. 5 of the 1964 Data Record Series.





CANADA

**SCOTIAN SHELF  
CABOT STRAIT AND CONTINENTAL SLOPE**

**No. 16  
1964 Data Record Series**

**Canadian Oceanographic Data Centre**

**Programmed by the  
Canadian Committee on Oceanography**

**1964**

ROGER DUHAMEL, F. R. S. C.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1964

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

SCOTIAN SHELF

CABOT STRAIT AND CONTINENTAL SLOPE

(C.O.D.C. Reference: C.R.N. 369)

No. 16

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography



DALHOUSIE UNIVERSITY  
and  
FISHERIES RESEARCH BOARD OF CANADA

Scotian Shelf  
Cabot Strait and Continental Slope

Ship: C.N.A.V. "Sackville"  
Local cruise designation: S-65  
Cruise period: August 17 - September 30, 1962  
Observers:  
Dr. M.J. Keen  
Mr. H. McPherson  
Mr. G. Ewing  
Mr. N. Morgan  
Mr. J. Denholm

INSTITUTE OF OCEANOGRAPHY, Dalhousie University, Halifax, N.S.  
and  
ATLANTIC OCEANOGRAPHIC GROUP - Dartmouth, N.S.

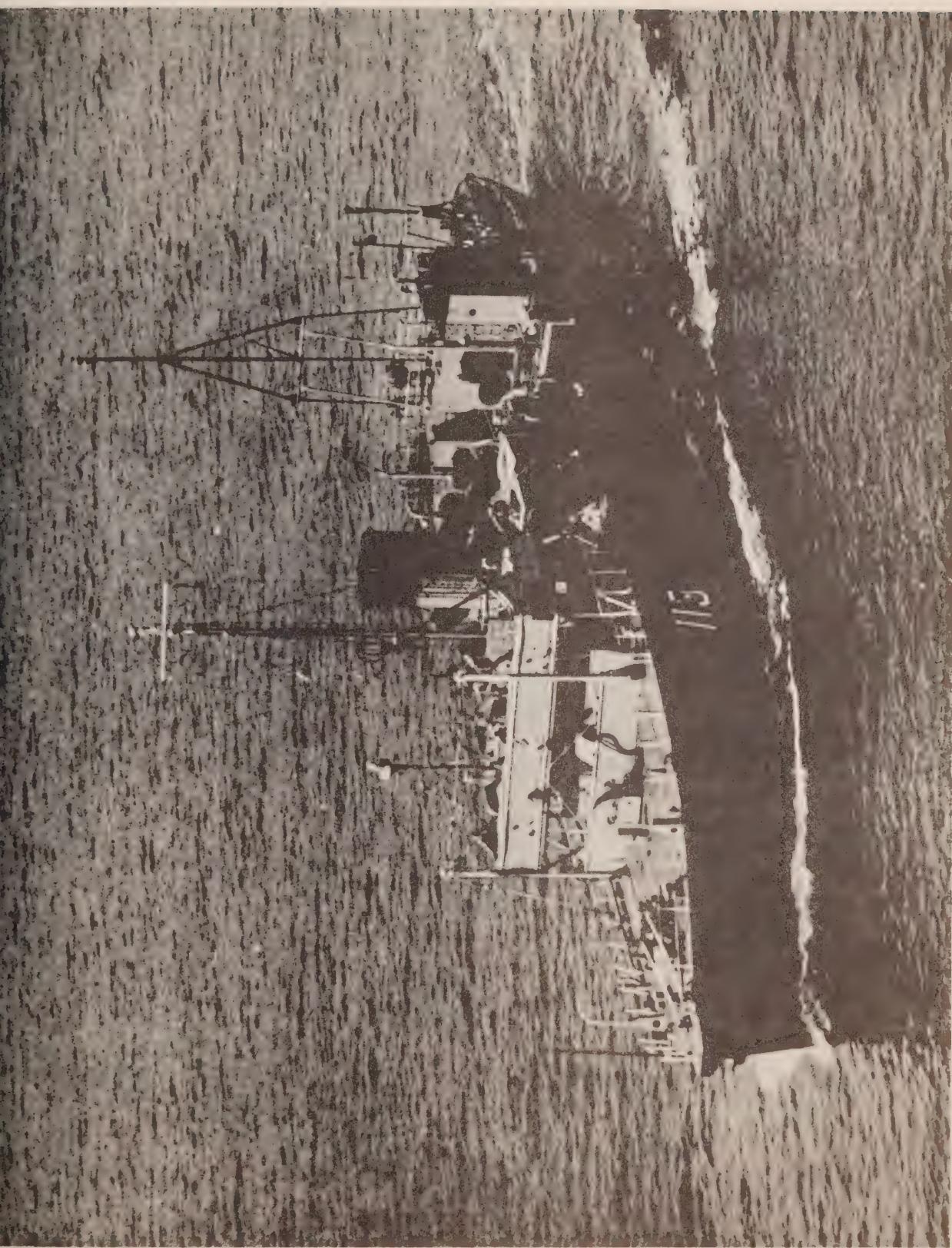


## **SECTION I**

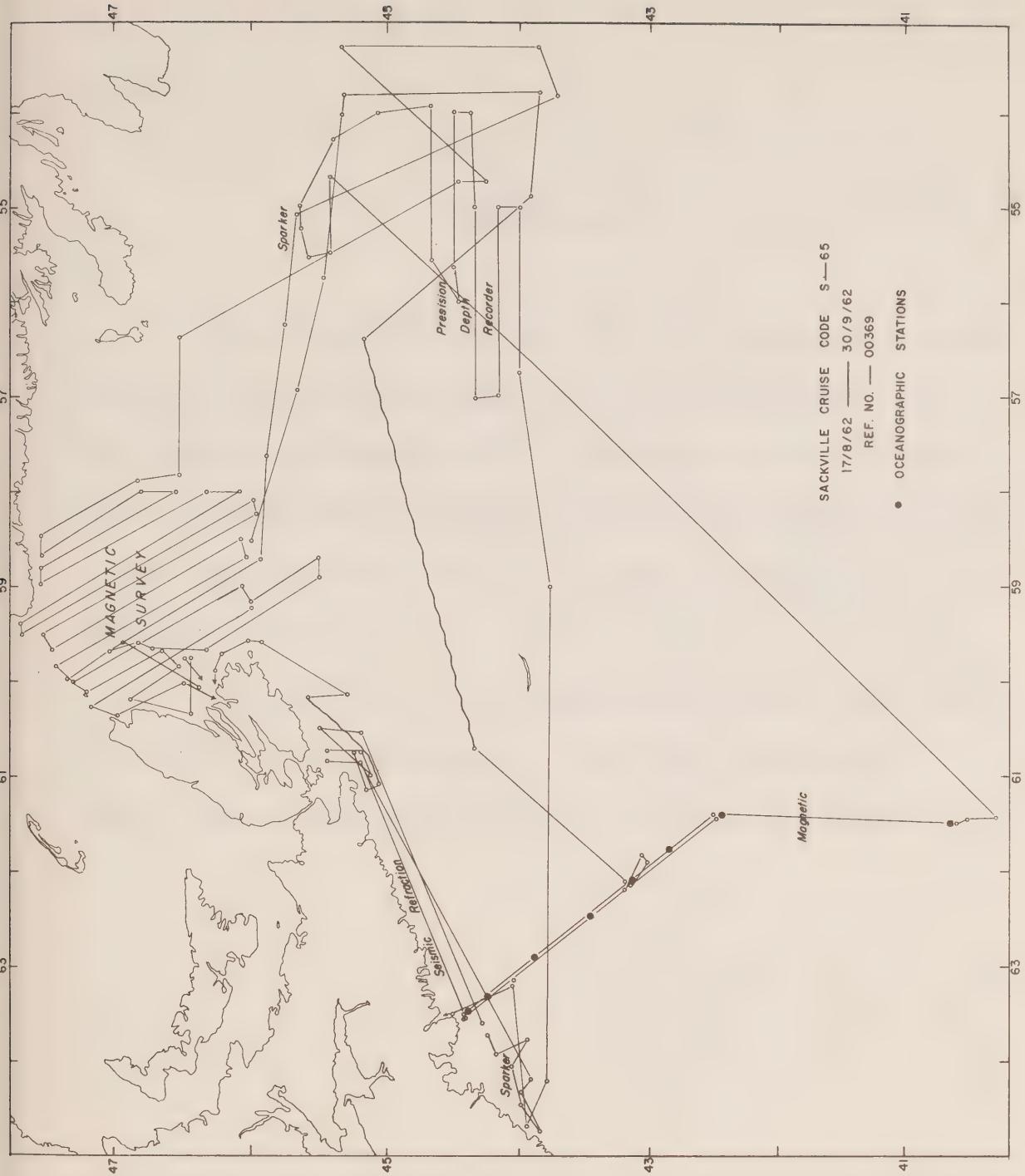
**Description of data collection procedures**



C.N.A.V. SACKVILLE









## INTRODUCTION

The chief purpose of this cruise was to carry out geophysical studies between Nova Scotia and Newfoundland; the seismic work included crustal refraction studies and sparker studies. A magnetic survey was conducted to tie in with similar work done by the Department of Mines and Technical Surveys in the Gulf of St. Lawrence. The gravity measurements failed because of mechanical troubles.

The oceanographic survey consisted of the occupation of the Halifax Section twice - once in August and once in September. The Section in September was not completed because the ship's engine needed repairs.

### EXTRACT FROM CRUISE LOG

The CNAV "Sackville" left Halifax, N.S. on August 17 for a four phase cruise and returned on September 30 1962. During this period, the ship refuelled three times. The good weather encountered was an aid to the type of work involved.

### OBSERVATION PROCEDURES

The oceanographic observations were carried out only on the Halifax section, as requested by the Atlantic Oceanographic Group of the Fisheries Research Board of Canada. Temperature and salinity measurements were taken at standard depths. All reversing water bottles used were of the Knudsen type, mounted with two protected reversing thermometers (Richter and Wiese). An unprotected reversing thermometer was used from 500 metres and below wherever the depth permitted. The deepest observations were obtained at 1400 metres. All thermometers were read twice to check possible errors. Surface samples for salinity were obtained from a plastic bucket. Surface temperatures were measured with a thermometer graduated in 0.1° C.. Salinity samples were collected in 8 oz. medicine bottles. Meteorological observations were taken by the ship's officers.

A few lines of bottom profiles were obtained with the Precision Depth Recorder across the slope off the Laurentian Channel.

### LABORATORY PROCEDURES

Temperatures were corrected and checked along with the bathy-thermograms for possible errors. Salinity determinations were made on a National Institute of Oceanography Salinometer. The other observations such as refraction studies and magnetic surveys do not appear in this report but can be obtained from the Institute of Oceanography, Dalhousie University, Halifax, N.S.

### BATHYTHERMOGRAPH DATA

A total of 16 bathythermographs were taken and later processed at the Bathythermograph Data Centre of the Bedford Institute of Oceanography, Dartmouth, N.S.

## PERSONNEL

### At Sea:

Phase 1:      M. . . Keen, Scientist-in-Charge  
                  H. . . McPherson  
                  O. . . Kennedy  
                  N. . . Morgan  
                  M. . . Lewis  
                  G. . . Ewing  
                  J. . . Denholm

Phase 2: As above without M. Lewis

Phase 3:	M.	Keen
	H.	McPherson
	J.	Denholm
	N.	Morgan
	S.	Nwachukwa
	A.	Goodacre
	E.	Nyland
	D.	Barrett

Phase 4:	M.	Keen
	H.	McPherson
	J.	Denholm
	N.	Morgan
	S.	Nwachukwa
	D.	Barrett
	E.	McAllister

## Data Analyses

Physical Oceanography: J.R. Chevrier  
G.N. Ewing  
M.E. MacLean

Salinity titrations: M.E. MacLean  
E.M. Fillmore

Bathythermographs: T. A. Grant  
D. M. MacDonald

Other investigations: M.J. Keen and Personnel  
from the Institute of  
Oceanography, Dalhousie University.



## SECTION II

Description of the machine-generated data record



## INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a standard deviation ( $\sigma$ ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "GENERAL INFORMATION" of section II of the data record.

The measurement error estimate of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e.,  $1\sigma = A$ ,  $2\sigma = B$ , etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O<sub>2</sub>) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement ( $\sigma$ ) under normal routine field conditions by:

CANADIAN OCEANOGRAPHIC DATA CENTRE

1 IDENT. CODE	2 LATITUDE (N=+)	3 LONGITUDE (W=-+)			5 DATE			6 TIME			7 DEPTH			9 NO. DEPTHS OBS'D.		
		DEG. O	MIN. 10	1	YEAR	MONTH	DAY	HOURS G.M.T.	10	TO BOTTOM	18	19	20	21	22	23
1 COUNTRY	2 INST.	3 O	4 5	6 7	8 9	10 11	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22
1 WATER	2 WAVES I	3 WAVES II	4 WIND	5 BAROMETER	6 AIR TEMP.	7 DIR.	8 Dw	9 Dw	10 Dw	11 Pw	12 Hw	13 Hw	14 Hw	15 Hw	16 Hw	17 Hw
1 COLOUR	2 TRANS.	3 Dw	4 Dr	5 % Hw	6 Dir	7 e	8 e	9 e	10 e	11 e	12 e	13 e	14 e	15 e	16 e	17 e
1 38	2 39	3 40	4 41	5 42	6 43	7 44	8 45	9 46	10 47	11 48	12 49	13 50	14 51	15 52	16 53	17 54
1 55	2 56	3 57	4 58	5 59	6 59	7 59	8 59	9 59	10 59	11 59	12 59	13 59	14 59	15 59	16 59	17 59
1 60	2 61	3 62	4 63	5 64	6 65	7 66	8 67	9 68	10 68	11 69	12 70	13 71	14 72	15 73	16 74	17 75
1 76	2 77	3 78	4 79	5 79	6 79	7 79	8 79	9 79	10 79	11 79	12 79	13 79	14 79	15 79	16 79	17 79
1 79	2 80	3 81	4 82	5 83	6 84	7 85	8 86	9 87	10 88	11 89	12 90	13 91	14 92	15 93	16 94	17 95
1 95	2 96	3 97	4 98	5 99	6 00	7 01	8 02	9 03	10 04	11 05	12 06	13 07	14 08	15 09	16 10	17 11
1 00	2 01	3 02	4 03	5 04	6 05	7 06	8 07	9 08	10 09	11 10	12 11	13 12	14 13	15 14	16 15	17 16
1 16	2 17	3 18	4 19	5 20	6 21	7 22	8 23	9 24	10 25	11 26	12 27	13 28	14 29	15 30	16 31	17 32
1 33	2 34	3 35	4 36	5 37	6 38	7 39	8 40	9 41	10 42	11 43	12 44	13 45	14 46	15 47	16 48	17 49
1 49	2 50	3 51	4 52	5 53	6 54	7 55	8 56	9 57	10 58	11 59	12 60	13 61	14 62	15 63	16 64	17 65
1 65	2 66	3 67	4 68	5 69	6 70	7 71	8 72	9 73	10 74	11 75	12 76	13 77	14 78	15 79	16 80	17 81
1 81	2 82	3 83	4 84	5 85	6 86	7 87	8 88	9 89	10 90	11 91	12 92	13 93	14 94	15 95	16 96	17 97
1 97	2 98	3 99	4 00	5 01	6 02	7 03	8 04	9 05	10 06	11 07	12 08	13 09	14 10	15 11	16 12	17 13
1 00	2 01	3 02	4 03	5 04	6 05	7 06	8 07	9 08	10 09	11 10	12 11	13 12	14 13	15 14	16 13	17 12
1 12	2 13	3 14	4 15	5 16	6 17	7 18	8 19	9 20	10 21	11 22	12 23	13 24	14 25	15 26	16 27	17 28
1 28	2 29	3 30	4 31	5 32	6 33	7 34	8 35	9 36	10 37	11 38	12 39	13 40	14 41	15 42	16 43	17 44
1 44	2 45	3 46	4 47	5 48	6 49	7 50	8 51	9 52	10 53	11 54	12 55	13 56	14 57	15 58	16 59	17 60
1 60	2 61	3 62	4 63	5 64	6 65	7 66	8 67	9 68	10 69	11 70	12 71	13 72	14 73	15 74	16 75	17 76
1 76	2 77	3 78	4 79	5 80	6 81	7 82	8 83	9 84	10 85	11 86	12 87	13 88	14 89	15 90	16 91	17 92
1 92	2 93	3 94	4 95	5 96	6 97	7 98	8 99	9 00	10 01	11 02	12 03	13 04	14 05	15 06	16 07	17 08
1 08	2 09	3 10	4 11	5 12	6 13	7 14	8 15	9 16	10 17	11 18	12 19	13 20	14 21	15 22	16 23	17 24
1 24	2 25	3 26	4 27	5 28	6 29	7 30	8 31	9 32	10 33	11 34	12 35	13 36	14 37	15 38	16 39	17 40
1 40	2 41	3 42	4 43	5 44	6 45	7 46	8 47	9 48	10 49	11 50	12 51	13 52	14 53	15 54	16 55	17 56
1 56	2 57	3 58	4 59	5 60	6 61	7 62	8 63	9 64	10 65	11 66	12 67	13 68	14 69	15 70	16 71	17 72
1 72	2 73	3 74	4 75	5 76	6 77	7 78	8 79	9 80	10 81	11 82	12 83	13 84	14 85	15 86	16 87	17 88
1 88	2 89	3 90	4 91	5 92	6 93	7 94	8 95	9 96	10 97	11 98	12 99	13 00	14 01	15 02	16 03	17 04
1 04	2 05	3 06	4 07	5 08	6 09	7 10	8 11	9 12	10 13	11 14	12 15	13 16	14 17	15 18	16 19	17 20
1 20	2 21	3 22	4 23	5 24	6 25	7 26	8 27	9 28	10 29	11 30	12 31	13 32	14 33	15 34	16 35	17 36
1 36	2 37	3 38	4 39	5 40	6 41	7 42	8 43	9 44	10 45	11 46	12 47	13 48	14 49	15 50	16 51	17 52
1 52	2 53	3 54	4 55	5 56	6 57	7 58	8 59	9 60	10 61	11 62	12 63	13 64	14 65	15 66	16 67	17 68
1 68	2 69	3 70	4 71	5 72	6 73	7 74	8 75	9 76	10 77	11 78	12 79	13 80	14 81	15 82	16 83	17 84
1 84	2 85	3 86	4 87	5 88	6 89	7 90	8 91	9 92	10 93	11 94	12 95	13 96	14 97	15 98	16 99	17 00
1 00	2 01	3 02	4 03	5 04	6 05	7 06	8 07	9 08	10 09	11 10	12 11	13 12	14 13	15 14	16 13	17 12
1 12	2 13	3 14	4 15	5 16	6 17	7 18	8 19	9 20	10 21	11 22	12 23	13 24	14 25	15 26	16 27	17 28
1 28	2 29	3 30	4 31	5 32	6 33	7 34	8 35	9 36	10 37	11 38	12 39	13 40	14 41	15 42	16 43	17 44
1 44	2 45	3 46	4 47	5 48	6 49	7 50	8 51	9 52	10 53	11 54	12 55	13 56	14 57	15 58	16 59	17 60
1 60	2 61	3 62	4 63	5 64	6 65	7 66	8 67	9 68	10 69	11 70	12 71	13 72	14 73	15 74	16 75	17 76
1 76	2 77	3 78	4 79	5 80	6 81	7 82	8 83	9 84	10 85	11 86	12 87	13 88	14 89	15 90	16 91	17 92
1 92	2 93	3 94	4 95	5 96	6 97	7 98	8 99	9 00	10 01	11 02	12 03	13 04	14 05	15 06	16 07	17 08
1 08	2 09	3 10	4 11	5 12	6 13	7 14	8 15	9 16	10 17	11 18	12 19	13 20	14 21	15 22	16 23	17 24
1 24	2 25	3 26	4 27	5 28	6 29	7 30	8 31	9 32	10 33	11 34	12 35	13 36	14 37	15 38	16 39	17 40
1 40	2 41	3 42	4 43	5 44	6 45	7 46	8 47	9 48	10 49	11 50	12 51	13 52	14 53	15 54	16 55	17 56
1 56	2 57	3 58	4 59	5 60	6 61	7 62	8 63	9 64	10 65	11 66	12 67	13 68	14 69	15 70	16 71	17 72
1 72	2 73	3 74	4 75	5 76	6 77	7 78	8 79	9 80	10 81	11 82	12 83	13 84	14 85	15 86	16 87	17 88
1 88	2 89	3 90	4 91	5 92	6 93	7 94	8 95	9 96	10 97	11 98	12 99	13 00	14 01	15 02	16 03	17 04
1 04	2 05	3 06	4 07	5 08	6 09	7 10	8 11	9 12	10 13	11 14	12 15	13 16	14 17	15 18	16 19	17 20
1 20	2 21	3 22	4 23	5 24	6 25	7 26	8 27	9 28	10 29	11 30	12 31	13 32	14 33	15 34	16 35	17 36
1 36	2 37	3 38	4 39	5 40	6 41	7 42	8 43	9 44	10 45	11 46	12 47	13 48	14 49	15 50	16 51	17 52
1 52	2 53	3 54	4 55	5 56	6 57	7 58	8 59	9 60	10 61	11 62	12 63	13 64	14 65	15 66	16 67	17 68
1 68	2 69	3 70	4 71	5 72	6 73	7 74	8 75	9 76	10 77	11 78	12 79	13 80	14 81	15 82	16 83	17 84
1 84	2 85	3 86	4 87	5 88	6 89	7 90	8 91	9 92	10 93	11 94	12 95	13 96	14 97	15 98	16 99	17 00
1 00	2 01	3 02	4 03	5 04	6 05	7 06	8 07	9 08	10 09	11 10	12 11	13 12	14 13	15 14	16 13	17 12
1 12	2 13	3 14	4 15	5 16	6 17	7 18	8 19	9 20	10 21	11 22	12 23	13 24	14 25	15 26	16 27	17 28
1 28	2 29	3 30	4 31	5 32	6 33	7 34	8 35	9 36	10 37	11 38	12 39	13 40	14 41	15 42	16 43	17 44
1 44	2 45	3 46	4 47	5 48	6 49	7 50	8 51	9 52	10 53	11 54	12 55	13 56	14 57	15 58	16 59	17 60
1 60	2 61	3 62	4 63	5 64	6 65	7 66	8 67	9 68	10 69	11 70	12 71	13 72	14 73	15 74	16 75	17 76
1 76	2 77	3 78	4 79	5 80	6 81	7 82	8 83	9 84	10 85	11 86	12 87	13 88	14 89	15 90	16 91	17 92
1 92	2 93	3 94	4 95	5 96	6 97	7 98	8 99	9 00	10 01	11 02	12 03	13 04	14 05	15 06	16 07	17 08
1 08	2 09	3 10	4 11	5 12	6 13	7 14	8 15	9 16	10 17	11 18	12 19	13 20	14 21	15 22	16 23	17 24
1 24	2 25	3 26	4 27	5 28	6 29	7 30	8 31	9 32	10 33	11 34	12 35	13 36	14 37	15 38	16 39	17 40
1 40	2 41	3 42	4 43	5 44	6 45	7 46	8 47	9 48	10 49</td							

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left( \frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2}, \text{ where}$$

$\sigma_i$  = Standard deviation of the combined error estimates at standard oceanographic depth,

$\Delta V_i$  = the interpolation error estimate of variable "V" at standard oceanographic depth =  $^{1/3} (V_{i_1} - V_{i_2})$

$\gamma$  = Interpolation polynomial coefficient.

$Z_j$  = Observed depth.

$Z_i$  = Standard oceanographic depth, such that:  $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction  $\frac{\sigma}{\sigma}$ , if  $\geq 2$ , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.). An alphabetical "L" following the temperature variable denotes a linear hand interpolation.

With respect to the interpolated value of the salinity variable if reported to three decimal digits, the **interpolation error estimate** is given only when  $\frac{\sigma}{\sigma} \geq 2$  (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

## EXPLANATION OF DATA RECORD HEADINGS

### MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE NUMBER: Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE NUMBER: Indicates the chronological order in which the stations were occupied.

(3) LATITUDE: Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.  
It is reported to tenths of hours (Table 1).  
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).  
00 m - 50 m = 00  
51 m - 150 m = 01  
151 m - 250 m = 02  
etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).

(14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;

NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.

(15) WAVES 1  
( $d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2  
( $d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.

(18) WIND FORCE (WND-FCE): Beaufort Notation (See Table 6).

WIND SPEED (WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.

(19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

(20) AIR TEMPERATURE: In degrees Celsius.

(21) WET BULB: In degrees Celsius.

(22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677

(23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.

(24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700

(25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.

(26) STATION: A station reference number, assigned by the institute prior to, or during the survey.

(27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

## OBSERVED DATA HEADINGS

(1) <i>GMT</i>	(2) <i>DEPTH</i>	(3) <i>TEMP</i>	(4) <i>SAL</i>	(5) <i>OXYGEN</i>	(6) <i>SGMT</i>
(7) <i>SOUND</i>	(8) <i>PO<sub>4</sub></i>	(9) -P-	(10) <i>NO<sub>2</sub></i>	(11) <i>NO<sub>3</sub></i>	(12) <i>SiO<sub>3</sub></i>
					(13) <i>pH.</i>

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) **G.M.T.:** The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) **DEPTH:** The depth in metres at the moment the oceanographic bottle reversed.

(3) **TEMPERATURE:** Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section.  
An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) **SALINITY:** Salinity as defined by:  $S = 0.03 + 1.805 C1\%$ , reported in:  
a. 1/100 parts per 1000, or  
b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)

In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) **OXYGEN:** The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.  
An alphabetical character following the value is the measurement error estimate as referred to under (3).

(6) **SIGMA-T:** The specific gravity anomaly as defined by: (Specific gravity - 1)  $\times 10^3$   
(e.g.,  $\sigma_t$  reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) **SOUND:** The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO <sub>4</sub>	Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO <sub>2</sub>	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre - No dissolved nitrogen included -
(11) NO <sub>3</sub>	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO <sub>3</sub>	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

#### INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

(1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the **combined measurement and interpolation error estimate** (see "INTRODUCTION" to section II of the data record).

(3) SALINITY:

- A. The reported salinity values are observed to three decimal places.
  - (i) the interpolation error estimate is less than twice the standard deviation of measurement
    - the interpolated value is reported to three decimal places (e.g., 30.139).
  - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
    - the interpolated value is reported to two decimal places, and followed by the **interpolation error estimate** (e.g., 29.23C).
- B. The reported salinity values are observed to two decimal places and followed by the **measurement error estimate**.
  - the interpolated value is reported to two decimal places, and followed by the **combined measurement and interpolation error estimate** (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the **combined measurement and interpolation error estimate** (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P \delta dp$$

$\Delta D$  is expressed in dynamic metres ( $10^5$  ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL ENERGY ANOMALY: The Potential energy anomaly  $\chi$  as defined by:

$$\chi = 1/g \int_0^P p \delta dp = \int_0^Z \rho p \delta dz$$

$\chi$  is expressed in units of  $10^8$  ergs/cm<sup>2</sup> and recorded to two decimal places (e.g., 116.44).

(9) SPECIFIC VOLUME ANOMALY: The specific volume anomaly as defined by:

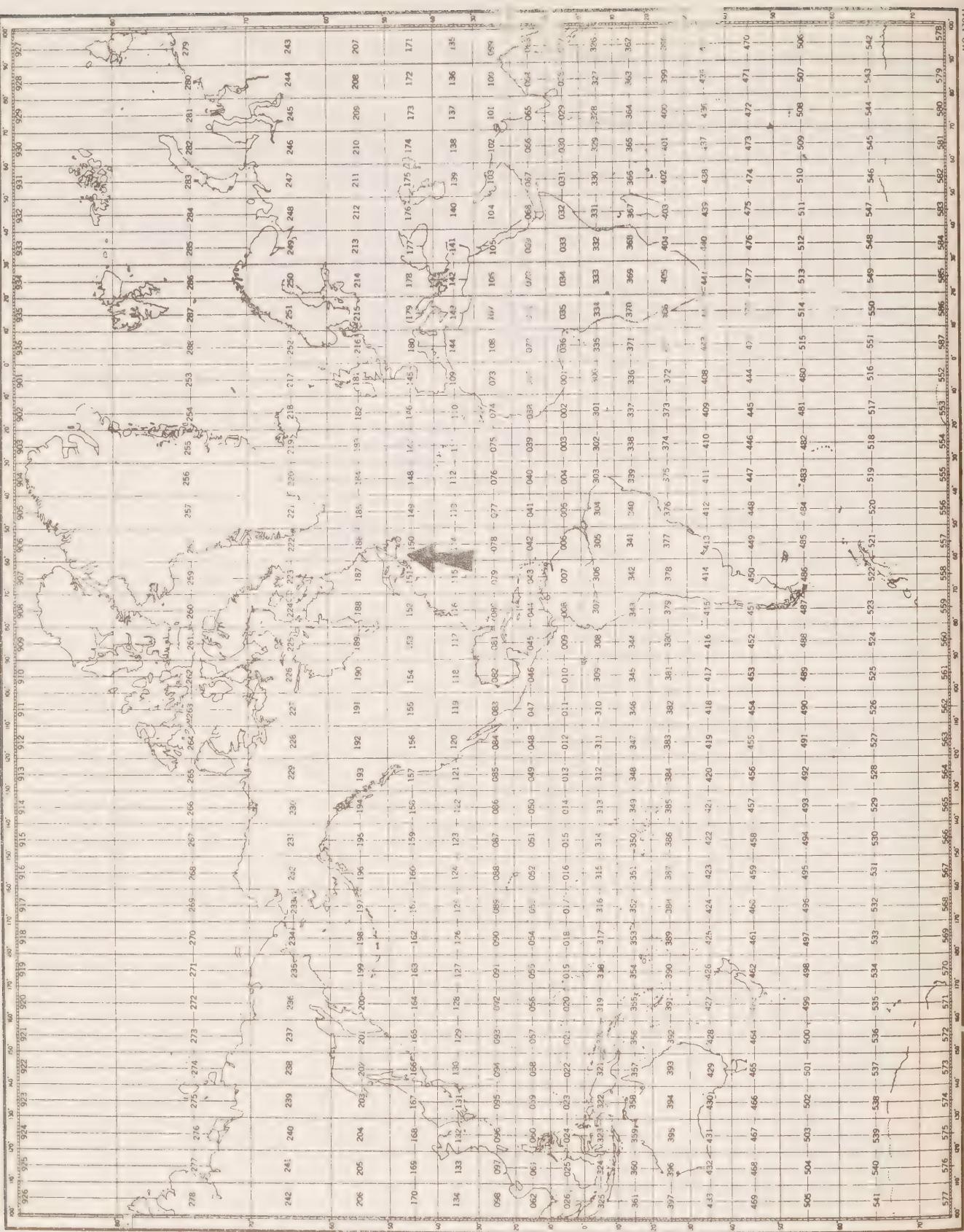
$$\delta = \Omega - \Omega_{35.0.P}$$

$\delta$  is expressed in ml/gr, and conventionally reported as  $10^5 \delta$ , to one decimal place (i.e.,  $\delta$  reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

## SPECIAL CHARACTERS

**† (Record mark):** is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs

**\*** (Asterisk): this character may occur in the **interpolated** portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one **observed depth interval**. The **third**, and all consequent levels within that interval are preceded by the asterisk to indicate that more than **two** machine interpolations were carried out, utilizing the same set of interpolation parabolas.



MARSDEN SQUARE CHART

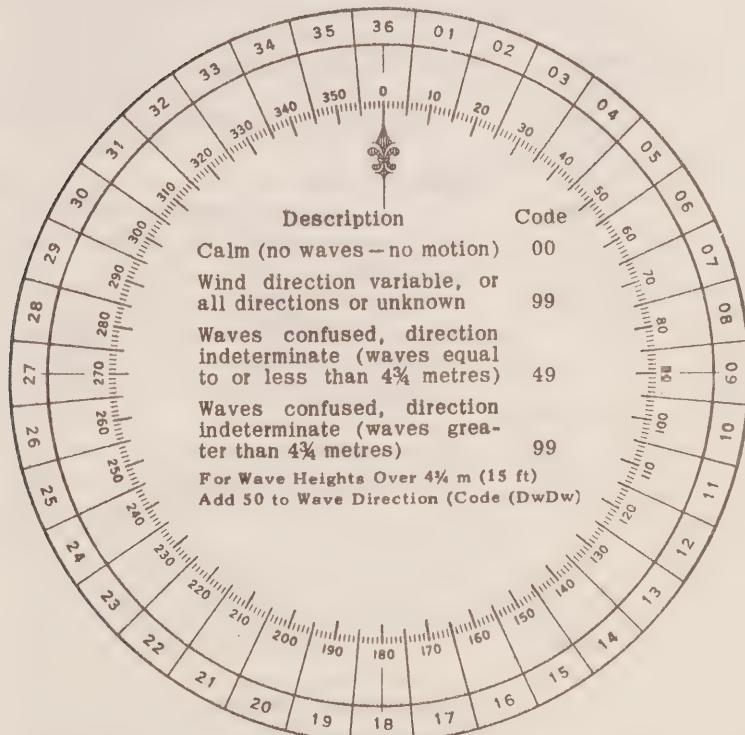
**Table 1**  
**CONVERSION**  
**MINUTES TO  $\frac{1}{10}$  HRS.**

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

**Table 2**  
**WATER COLOR CODE**  
**Based on Percentage Yellow**

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

**Table 3. DIRECTION CODE (dd)**



**NOTE:**

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

**Table 4. PERIOD OF THE WAVES (P<sub>w</sub>)**  
 (Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

**Table 5. HEIGHT OF THE WAVES (H<sub>w</sub>)**

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 =  $\frac{1}{4}$  m (1 ft) to  $\frac{3}{4}$  m (2½ ft); 5 =  $2\frac{1}{4}$  m (7 ft) to  $2\frac{3}{4}$  m (9 ft); 9 =  $4\frac{1}{4}$  m (13½ ft) to  $4\frac{3}{4}$  m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of  $2\frac{3}{4}$  m is reported by code figure 5.

Code	Code
0 Less than $\frac{1}{4}$ m (1 ft)	0 5 m (16 ft)
1 $\frac{1}{2}$ m ( 1½ ft)	1 $5\frac{1}{2}$ m (17½ ft)
2 1 m ( 3 ft)	2 6 m (19 ft)
3 $1\frac{1}{2}$ m ( 5 ft)	Add 3 $6\frac{1}{2}$ m (21 ft)
4 2 m ( 6½ ft)	50 4 7 m (22½ ft)
5 $2\frac{1}{2}$ m ( 8 ft)	to 5 $7\frac{1}{2}$ m (24 ft)
6 3 m ( 9½ ft)	Dw Dw 6 8 m (25½ ft)
7 $3\frac{1}{2}$ m (11 ft)	7 8½ m (27 ft)
8 4 m (13 ft)	8 9 m (29 ft)
9 $4\frac{1}{2}$ m (14 ft)	9 $9\frac{1}{2}$ m (30½ ft) or more
X Height not determined	

**Table 6. WIND FORCE CODE**

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

30  
Table 7. PRESENT WEATHER  
W.W. CODE

**NO PRECIPITATION ON STATION AT TIME OF OBSERVATION**

No meteors except photometors	Code figure ww	Haze, dust, sand or smoke	characteristic change of the state of sky during the past hour		
				ww = 20 - 29	ww = 30 - 39
00	Cloud development not observed or not observable			Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	
01	Clouds generally dissolving or becoming less developed			20 Drizzle (not freezing) or snow grains	
02	State of sky on the whole unchanged			21 Rain (not freezing)	
03	Clouds generally forming or developing			22 Snow	
04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes			23 Rain and snow or ice pellets, type (a)	
05	Haze			24 Freezing drizzle or freezing rain	
06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation			25 Shower(s) of rain	
07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen			26 Shower(s) of snow, or of rain and snow	
08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm			27 Shower(s) of hail, or of rain and hail	
09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour			28 Fog or ice fog	
10	Mist			29 Thunderstorm (with or without precipitation)	
11	Patches of shallow fog or ice fog at the station, whether on land or sea, not continuous			ww = 30 - 39 Duststorm, sandstorm, drifting or blowing snow	
12	More or less deeper than about 2 metres on land or 10 metres at sea			30 Slight or moderate dust-storm or sand-storm	- has decreased during the preceding hour
13	Lightning visible, no thunder heard			31 Severe dust-storm or sand-storm	- no appreciable change during the preceding hour
14	Precipitation within sight, not reaching the ground or the surface of the sea			32	- has begun or has increased during the preceding hour
15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station			33	- has decreased during the preceding hour
16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station			34	- no appreciable change during the preceding hour
17	Thunderstorm, but no precipitation at the time of observation			35	- has begun or has increased during the preceding hour
18	Squalls at or within sight of the station during the preceding hour			36	Slight or moderate blowing snow
19	Funnel clouds or at the time of observation			37	Heavy drifting snow
				38	Slight or moderate blowing snow
				39	Heavy blowing snow
				ww = 40 - 49	Fog or ice fog at the time of observation
				40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
				41	Fog or ice fog in patches
				42	Fog or ice fog, sky visible
				43	Fog or ice fog, sky invisible
				44	Fog or ice fog, sky visible
				45	Fog or ice fog, sky invisible
				46	Fog or ice fog, sky visible
				47	Fog or ice fog, sky invisible
				48	Fog, depositing rime, sky visible
				49	Fog, depositing rime, sky invisible

**NO PRECIPITATION ON STATION AT TIME OF OBSERVATION**

## PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

50	Drizzle, not freezing, intermittent	{ slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	{ moderate at time of observation
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	{ heavy (dense) at time of
55	Drizzle, not freezing, continuous	observation
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

ww = 60 - 69 Rain

60	Rain, not freezing, intermittent	{ slight at time of observation
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	{ moderate at time of observation
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	{ heavy at time of observation
65	Rain, not freezing, continuous	
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

70 - 79 Solid precipitation not in showers

70	Intermittent fall of snow flakes	{ slight at time of observation
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	{ moderate at time of observation
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	{ heavy at time of observation
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain	- slight
88	or rain and snow mixed	- moderate or heavy
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	- slight
90		- moderate or heavy
91	Slight rain at time of observation	
92	Moderate or heavy rain at time of observation	
93	Slight snow, or rain and snow mixed or hail at time of observation	thunderstorm during the preceding hour but not at time of observation
94	Moderate or heavy snow, or rain and snow mixed or hail at time of observation	
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	
96	Thunderstorm, slight or moderate, with hail at time of observation	
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	thunderstorm at time of observation
98	Thunderstorm, combined with duststorm or sandstorm at time of observation	
99	Thunderstorm, heavy, with hail at time of observation	

**Table 8. CLOUD TYPE CODE**

Code	Cloud Type	Code	Cloud Type
0	Cirrus .....	5	Nimbostratus .....
1	Cirrocumulus .....	6	Stratocumulus .....
2	Cirrostratus .....	7	Stratus .....
3	Altocumulus .....	8	Cumulus .....
4	Altostratus .....	9	Cumulonimbus .....
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

**Table 9. CLOUD AMOUNT CODE**

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta =  $\frac{1}{8}$  of the sky covered**Table 10. VISIBILITY**

Code	Estimate of hor. Visibility
0	Less than 50 metres (less than 55 yards)
1	50–200 metres (approx. 55–220 yards)
2	200–500 metres (approx. 220–550 yards)
3	500–1,000 metres (approx. 550 yards– $\frac{5}{8}$ n.m.)
4	1–2 km (approx. $\frac{5}{8}$ –1 n.m.)
5	2–4 km (approx. 1–2 n.m.)
6	4–10 km (approx. 2–6 n.m.)
7	10–20 km (approx. 6–12 n.m.)
8	20–50 km (approx. 12–30 n.m.)
9	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

<u>Institutes:</u>	Institute of Oceanography, Dalhousie University and Atlantic Oceanographic Group, F.R.B.
<u>Observation platform:</u>	C.N.A.V. "Sackville"
<u>Vessel's cruising speed:</u>	11 knots
<u>Total number of stations occupied:</u>	16
<u>Anemometer height above sea level:</u>	11 metres
<u>Water transparency</u>	obtained using a Secchi disc
<u>Air temperature</u>	observed from a sling psychrometer
<u>Wet bulb temperature</u>	observed from a sling psychrometer
<u>Surface sea water temperature</u>	obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.02
Salinity	0.003



### SECTION III

Serial oceanographic data



C-REF-NO 369 YR 1962 DEPTH 4782 WAVES 1 XX AIR T 19.7 VIS  
 CUNS. NO 001 MONTH 8 MXSAMPD 07 WAVES 2 XX WET B 15.8 STM  
 LAT 40-13.5N DAY 24 NO.OPTH 13 WND-D1K WW-CODE  
 LON 61-25.3W HR 05.2 W-COLOR WND-SPD CLD-TPC  
 MARSU SG 151 W-TRNSP BARO CLD-AMT Hw

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
025	0000	236 B				
052	0011	2364	34789		2361	15315
052	0023	2368	34788		2360	15318
052	0034	2398	34928		2361	15329
052	0057	2008	35472		2512	15238
052	0086	1703	35760		2611	15160
052	0115	1544	35777		2649	15116
052	0229	1337	35625		2682	15066
052	0344	1043	35338		2716	14980
042	0375	0956	35218		2722	14952
042	0478	0759	35072		2741	14893
042	0595	0593	35061		2763	14847
042	0712	0505	35016		2770	14830

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	2360 B	34789		2362	15312	0000	00000	4282
0010	2359 B	3476 D		2360	15313	0043	00002	4301
0020	2366	3478 B		2360	15317	0086	00009	4311
0030	2394 C	34865		2358	15326	0130	00020	4333
0050	2152 I	3530 F		2460	15274	0207	00051	3365
0075	1798	3569 B		2583	15185	0277	00094	2207
0100	1614 B	3579 C		2634	15136	0327	00137	1728
0125	1514 E	35773		2655	15108	0368	00184	1529
0150	1449 I	3576 B		2668	15092	0405	00236	1413
*0175	1399 I	3573 C		2677	15079	0439	00294	1337
*0200	1362 I	3569 B		2681	15071	0473	00358	1300
*0225	1339 B	35634		2682	15067	0505	00429	1299
0250	1288	35587		2689	15053	0537	00507	1240
0300	1163	3547 B		2704	15017	0597	00673	1102
0400	0899 B	3516 B		2726	14935	0698	01031	0899
0500	0722	3507 B		2746	14882	0779	01403	0716
0600	0590	3503 E		2761	14846	0844	01769	0576
0700	0511	35014		2769	14830	0899	02129	0495

C-REF-NO 369 YR 1962 DEPTH 4394 WAVES 1 XX AIR T 18.3 VIS  
 CONS. NO 002 MONTH 8 MXSAMPD 11 WAVES 2 XX WET B 14.7 STN  
 LAT 41-235N DAY 24 NO.DPTH 14 WND-DIR WW-CODE  
 LON 61-250W HR 14.0 W-COLOR WND-SPD CLD-TPE  
 MARSD SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
125	0000	223 B				
140	0013	2196	34200		2364	15266
140	0027	2146	34769		2421	15262
140	0040	1765	35255		2557	15164
140	0068	1522	35492		2632	15098
140	0101	1485	35778		2662	15095
140	0135	1390	35650		2673	15069
140	0270	1086	35360		2710	14984
140	0405	0782	35091		2739	14890
132	0540	0586	35041		2762	14835
132	0677	0495	35544		2813	14827
132	0815	0471 B	34998		2773	14833
132	0953	0428	34990		2777	14838
132	1090	0415	34996		2779	14855

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	2230 B	34200		2355	15273	0000	00000	4351
0010	2264 I	3426 I		2350	15283	0044	00002	4401
0020	2195 H	3445 G		2383	15270	0087	00009	4085
0030	2065 G	3489 B		2453	15243	0124	00018	3427
0050	1622 I	3540 I		2602	15125	0179	00039	2008
0075	1505 E	3557 C		2642	15095	0225	00068	1643
0100	1485	35772		2662	15095	0264	00103	1459
0125	1421	3571 D		2671	15078	0300	00144	1380
0150	1353	3561 B		2677	15059	0334	00192	1325
0175	1294 B	3555 C		2685	15042	0366	00246	1262
*0200	1236 C	3549 D		2691	15026	0397	00306	1200
*0225	1131 B	3544 C		2698	15010	0427	00370	1141
*0250	1127 B	3539 B		2705	14995	0455	00438	1083
0300	1014 B	3529 B		2717	14962	0507	00584	0970
0400	0792	35099		2738	14893	0595	00896	0777
0500	0633	3502 C		2754	14846	0666	01220	0627
0600	0535	3529 I		2788	14827	0713	01479	0309
0700	0489	3547 I		2808	14828	0735	01622	0130
0800	0472 B	3507 G		2778	14832	0763	01843	0417
1000	0428 B	3490 I		2770	14845	0856	02717	0505

C-REF-MO 300 YR 1962 DEPTH 2853 WAVES 1 XX AIR T 17.2 VIS  
 CONS. NO 003 MONTH 8 MXSAMPO 11 WAVES 2 XX WET B 12.8 STN  
 LAT 42-315N DAY 24 NO.DPTH 15 WND-DIR WW-CODE  
 LON 61-240W HR 21.8 W-COLUR WND-SPD CLD-TPE  
 MARSID SQ 151 W-TRNSP. BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
203	0000	171 B				
218	0014	1668	31517		2294	15086
218	0027	0927	32468		2512	14849
218	0039	1026	34096		2622	14908
218	0063	1161	34886		2659	14970
218	0092	1256	35309		2674	15013
218	0121	1193	35241		2681	14995
218	0237	0950	35139		2716	14926
218	0354	0743	35085		2744	14867
209	0475	0506	34963		2766	14790
209	0586	0464	34986		2773	14792
209	0695	0449 B	34964		2773	14803
209	0804	0411	34937		2775	14805
209	0908	0404	34955		2777	14820
209	1090	0382	34951		2779	14841

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1710 B	31517		2285	15097	0000	00000	5022
0010	1480 I	3142 B		2328	15025	0048	00002	4607
0020	1313 I	31847		2395	14977	0091	00009	3972
0030	0917 I	3288 I		2545	14851	0124	00017	2540
0050	1096	3469 I		2656	14943	0165	00032	1498
0075	1214 B	35126		2668	14994	0201	00056	1392
0100	1246 C	3531 D		2676	15011	0235	00086	1320
0125	1184	35235		2682	14993	0268	00124	1269
0150	1130	3520 B		2690	14977	0299	00168	1203
*0175	1077	3517 C		2697	14962	0329	00217	1135
*0200	1025	3515 B		2705	14948	0356	00270	1066
*0225	0974	35142		2713	14933	0382	00326	0996
0250	0927	35133		2720	14920	0407	00386	0931
0300	0838	35111		2732	14894	0451	00509	0818
0400	0643 D	3503 B		2754	14834	0523	00764	0612
0500	0488 B	3497 B		2768	14787	0578	01015	0480
0600	0462	34985		2773	14793	0625	01279	0445
0700	0447 B	34962		2773	14803	0670	01583	0454
0800	0412	34938		2775	14805	0716	01932	0441
1000	0386 B	3494 B		2778	14827	0803	02742	0424

C-REF-NO 369 YR 1962 DEPTH 1033 WAVES 1 XX AIR T 16.1 VIS  
 CUNS. NO 004 MONTH 8 MAXAMPD 07 WAVES 2 XX WET B 14.1 STN  
 LAT 42-51.0N DAY 25 NO.DPTH 14 WND-DIR WW-CODE  
 LUN 61-44.0W HR 01.5 W-COLOR WND-SPD CLD-TPE  
 MARSID SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
005	1000	176 B				
015	0910	1700	31209		2263	15092
015	0930	0638	32450		2552	14737
015	0050	0461	32947		2611	14675
015	0075	0833	34171		2659	14843
015	0100	1143	35159		2684	14973
015	0150	1022	35151		2705	14938
015	0200	0914	35098		2719	14906
009	0294	0725	35001		2740	14849
015	0300	0730	34992		2738	14854
009	0394	0900	34948		2758	14801
009	0493	0488 B	34954		2767	14786
009	0592	0456	34941		2770	14789
009	0691	0438	34951		2773	14798

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1760 B	31209		2249	15108	0000	00000	5359
0010	1700	31209		2263	15092	0053	00003	5227
0020	1194 I	3177 I		2412	14935	0098	00009	3807
0030	0638	32450		2552	14737	0130	00017	2480
0050	0461	32947		2611	14675	0174	00035	1911
0075	0833	34171		2659	14843	0217	00061	1465
0100	1143	35159		2684	14973	0251	00091	1244
0125	1143 I	3532 I		2697	14980	0281	00126	1131
0150	1022	35151		2705	14938	0308	00164	1053
0175	0967	35127		2713	14922	0334	00207	0984
0200	0914	35098		2719	14906	0358	00253	0926
0225	0865 b	35067		2725	14892	0381	00303	0878
0250	0817 C	35039		2730	14877	0402	00355	0831
0300	0736	34992		2738	14854	0442	00468	0756
0400	0558	34948		2759	14799	0509	00703	0566
0500	0485 B	34953		2768	14786	0562	00946	0484
0600	0449 B	34948		2771	14787	0610	01214	0456
0700	0438	34951		2773	14800	0656	01521	0452

C-REF-NO 369 YR 1962 DEPTH 91 WAVES 1 XX AIR T 17.7 VIS  
 CONS. NO 005 MONTH 8 MXSAMPD 01 WAVES 2 XX WET B 14.2 STN  
 LAT 43-11UN DAY 25 NO.DPTH 6 WND-D1R WW-CODE  
 LON 62-060W HR 04.4 W-COLOR WND-SPD CLD-TPE  
 MARSD SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
052	0000	164	B			
044	0010	1623		31520	2305	15072
044	0019	1584		31570	2317	15062
044	0029	1155		31966	2434	14926
044	0048	0453		32514	2578	14665
044	0072	0461		33319	2641	14683

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1640 B	31520		2301	15075	0000	00000	4866
0010	1623	31520		2305	15072	0049	00002	4832
0020	1549 C	3160 B		2327	15051	0096	00010	4618
0030	1108 B	31997		2445	14910	0137	00020	3499
0050	0502 I	3264 I		2583	14688	0194	00042	2185

C-REF-NO 369 YR 1962 DEPTH 82 WAVES 1 XX AIR T 16.3 VIS  
 CONS. NO 006 MONTH 8 MXSAMPD 00 WAVES 2 XX WLT B 14.4 STN  
 LAT 43-275N DAY 25 NO.DPTH 5 WND-DIR WW-CODE  
 LON 62-265W HR 07.9 W-COLOR WND-SPD CLD-TPE  
 MARSD SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
087	0000	165	B			
079	0010	1629	31315		2288	15071
079	0020	0716	31950		2502	14760
079	0030	0308	32078		2557	14595
079	0050	0294	32792		2615	14602

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1650	B	31315	2283	15076	0000	00000	5038
0010	1629		31315	2288	15071	0050	00003	4995
0020	0716		31950	2502	14760	0090	00008	2949
0030	0308		32078	2557	14595	0117	00015	2423
0050	0294		32792	2615	14602	0161	00032	1873

C-REF-NO 369 YR 1962 DEPTH 273 WAVES 1 XX AIR T 16.1 VIS  
 CONS. NO 007 MONTH 8 MXSAMPD 02 WAVES 2 XX WET B 13.8 STN  
 LAT 43-520N DAY 25 NO.DPTH 9 WND-DIR WW-CUDE  
 LON 62-532W HR 11.3 W-COLOR WND-SPD CLD-TPE  
 MARS0 SG 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
110	0000	165	B			
113	0010	1678	30913		2246	15081
113	0020	1558	30964		2276	15046
113	0030	0510	32087		2538	14680
113	0050	0220	32435		2593	14565
113	0075	0360	33067		2631	14638
113	0100	0587	33852		2668	14747
113	0150	0794	34542		2694	14846
113	0200	0804	34655		2702	14859

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1650 B	30913		2252	15071	0000	00000	5332
0010	1678	30913		2246	15081	0054	00003	5395
0020	1558	30964		2276	15046	0106	00011	5104
0030	0510	32087		2538	14680	0145	00020	2607
0050	0220	32435		2593	14565	0192	00039	2086
0075	0360	33067		2631	14638	0240	00069	1724
0100	0587	33852		2668	14747	0279	00103	1379
0125	0723 C	3431 F		2686	14811	0312	00141	1218
0150	0794	34542		2694	14846	0342	00183	1147
0175	0840 D	3475 I		2703	14870	0370	00229	1069
0200	0804	34655		2702	14859	0397	00282	1086

C-REF-NO 369 YR 1962 DEPTH 150 WAVES 1 XX AIR T 15.8 VIS  
 CONS. NO 008 MONTH 8 MXSAMPD 01 WAVES 2 XX WET B 14.5 STN  
 LAT 44-160N DAY 25 NO.DPTH 7 WND-DIR WW-CODE  
 LON 63-193W HR 14.5 W-COLOR WND-SPD CLD-TPE  
 MARSU SQ 151 W-TRNSP BARD CLD-AMT HW

## O B S E R V E D

GMI	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
142	0000	156 8				
145	0010	1558	30708	2257	15042	
145	0020	1247	30932	2337	14943	
145	0030	0514	31782	2514	14678	
145	0050	0201	32141	2571	14552	
145	0075	0130	32519	2606	14530	
145	0100	0253	32824	2621	14593	

## I N T L R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	PUT.EN	SVA
0000	1560 8	30708	2256	15041	0000	00000	5291	
0010	1558	30708	2257	15042	0053	00003	5289	
0020	1247	30932	2337	14943	0102	00010	4524	
0030	0514	31782	2514	14678	0139	00019	2840	
0050	0201	32141	2571	14552	0191	00040	2295	
0075	0130	32519	2606	14530	0245	00073	1961	
0100	0253	32824	2621	14593	0292	00116	1818	

C-REF-NO 369 YR 1962 DEPTH 90 WAVES 1 XX AIR T 16.2 VIS  
 CONS. NO 009 MONTH 8 MXSAMPD 01 WAVES 2 XX WET B 14.3 STN  
 LAT 44-24N DAY 25 NO.DPTH 6 WND-DIR WW-CODE  
 LUN 63-280W HR 15.7 W-COLOR WND-SPD CLD-TPE  
 MARSQ SQ 151 W-TRNSP BARD CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
156	0000	156 B				
157	0010	1535	30759		2266	15035
157	0020	0772	31093		2427	14771
157	0029	0369	31470		2504	14613
157	0049	0211	32004		2559	14555
157	0073	0159	32197		2578	14538

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1560 B	30759		2260	15041	0000	00000	5253
0010	1535	30759		2266	15035	0052	00003	5204
0020	0772	31093		2427	14771	0097	00009	3662
0030	0348 D	31505		2508	14604	0130	00017	2590
0050	0210 L	32004		2559	14554	0183	00039	2405
0075	0195 H	32190		2575	14554	0242	00076	2254

C-REF-NO 369 YR 1962 DEPTH 2700 WAVES 1 XX AIR T 15.5 VIS  
 CONS. NO 010 MONTH 9 MXSAMPC 08 WAVES 2 XX WET B 14.7 SIN  
 LAT 42-31N DAY 27 NO.DPTH 14 WND-DIR WW-CODE  
 LUN 61-31W HR 03.4 W-COLOR WND-SPD CLD-TPE  
 MARSID SW 151 W-TRNSP BARO CLD-AMT Hw

## O B S E R V E D

GMI	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
015	0000	144 B				
034	0008	1428	31956		2380	15015
034	0119	1408	31928		2382	15009
034	0023	1387	31896		2384	15003
034	0130	0549	33069		2611	14711
034	0077	1250	35413		2683	15010
034	0153	1079	35239		2702	14960
034	0230	0910	35140		2723	14910
034	0306	0723	34988		2740	14850
027	0437	0631	35000		2753	14835
027	0523	0517	34927		2762	14802
027	0604	0479	34979		2770	14801
027	0690	0466	34974		2772	14810
027	0780	0433	34784		2760	14809

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1440 B	31956		2378	15017	0000	00000	4132
0010	1423	31949		2361	15013	0041	00002	4105
0020	1412 F	3188 E		2378	15010	0083	00008	4136
0030	1422 I	3235 I		2487	14883	0119	00018	3095
0050	0572 I	3393 F		2677	14733	0163	00034	1294
0075	1170 I	3533 B		2692	14981	0194	00053	1164
0100	1305 I	3569 I		2693	15035	0224	00060	1159
0125	1260 I	3566 I		2700	15024	0252	00112	1096
*0150	1105 G	3531 I		2702	14970	0279	00151	1082
0175	1032	35210		2708	14947	0306	00195	1031
0200	0977	3518 B		2715	14930	0331	00244	0969
*0225	0921	35146		2722	14914	0355	00295	0908
0250	0857 B	3510 B		2728	14893	0377	00349	0848
0300	0736	34999		2739	14854	0417	00463	0752
0400	0647 G	3499 D		2750	14835	0488	00715	0653
0500	0546 B	3494 B		2760	14811	0550	00998	0567
0600	0480	34976		2770	14800	0602	01293	0473
0700	0455 C	3495 C		2770	14806	0650	01614	0477

C-REF-NO 369 YR 1962 DEPTH 900 WAVES 1 XX AIR T 12.2 VIS  
 CONS. NO 011 MONTH 9 MXSAMPC 09 WAVES 2 XX WET B 13.0 STN  
 LAT 42-506N DAY 27 NO.DPTH 15 WND-LINR WWD-CDFC  
 LON 61-445W HR 06.7 W-COLOR WND-SPD CLD-TPE  
 MARSID SQ 151 W-TRNSP BARD CLD-AMT  
 HW

## U B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
057	0000	135	B			
067	0009	1309	31879		2398	14974
067	0018	1288	31877		2402	14969
067	0027	0963	32056		2474	14857
067	0045	0331	32557		2593	14614
067	0091	1081	34747		2663	14945
067	0136	1179	35241		2683	14993
067	0181	1144	35303		2695	14989
067	0272	0817	35048		2731	14881
060	0369	0629	34972		2751	14823
060	0464	0547	34993		2763	14866
060	0560	0473	34949		2769	14791
060	0657	0452	34957		2772	14798
060	0754	0437	34951		2773	14808
060	0853	0416	34945		2775	14816

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1350 B	31879		2390	14987	0000	00000	4013
0010	1314 C	31874		2397	14976	0040	00062	3950
0020	1229 E	31907		2416	14949	0079	00068	3773
0030	0839 F	32126		2499	14812	0113	00016	2985
0050	0346 I	3281 I		2612	14624	0162	00036	1908
0075	0665 I	3401 I		2671	14776	0203	00011	1356
0100	1131 G	3493 H		2668	14966	0238	00092	1393
0125	1190 H	3522 I		2679	14995	0272	00131	1295
0150	1186	3529 C		2687	14996	0303	00176	1227
0175	1155	3531 B		2693	14992	0334	00226	1173
0200	1084 G	3526 E		2703	14970	0362	00281	1087
0225	0998 I	3520 G		2713	14943	0380	00338	0993
*0250	0905 H	3513 E		2723	14912	0412	00396	0903
0300	0749	35011		2738	14859	0454	00514	0761
0400	0590 B	3498 B		2756	14815	0522	00755	0593
0500	0516	34977		2766	14799	0578	01009	0504
0600	0461	34950		2770	14792	0627	01286	0460
0700	0445	34955		2772	14802	0674	01599	0457
0800	0426	34950		2774	14811	0720	01952	0448

C-REF-NO 369 YR 1962 DEPTH 90 WAVES 1 XX AIR T 14.5 VIS  
 CONS. NO 012 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B 13.3 STN  
 LAT 43-110N DAY 27 NO.DPTH 6 WND-DIR WND-SPD Ww-CODE  
 LUN 62-060W HR 09.3 W-COLOR W-TRNSP BARO CLD-TYPE  
 MARSID SQ 151

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
090	0000	133 B				
093	0010	1309	31724		2386	14973
093	0019	1298	31733		2389	14970
093	0029	1088	31890		2440	14901
093	0048	0851	32122		2496	14819
093	0072	0506	33054		2615	14698

## I N T E R P U L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1330 B	31724		2382	14978	0000	00000	4089
0010	1309	31724		2386	14973	0041	00002	4052
0020	1280 B	31745		2394	14965	0081	00008	3986
0030	1073	31899		2443	14896	0119	00018	3512
0050	0823 L	32199		2507	14810	0184	00044	2912

C-REF-NO 369 YR 1962 DEPTH 72 WAVES 1 XX AIR T 14.7 VIS  
 CONS. NO 013 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B 13.8 STN  
 LAT 43-288N DAY 27 NO.DPTH 6 WND-DIR WND-SPD Ww-CODE  
 LON 62-270W HR 18.7 W-COLOR W-TRNSP BARU CLD-TPE  
 MARSID SQ 151

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
184	0000	141 B				
187	0009	1391	31464		2350	14997
187	0019	1158	31660		2410	14921
187	0028	1004	31779		2446	14869
187	0047	0416	32784		2603	14653
187	0070	0398	32995		2622	14652

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1410 B	31464		2346	15001	0000	00000	4434
0010	1371 B	31480		2355	14990	0044	00002	4349
0020	1141	31670		2414	14915	0085	00008	3793
0030	0944 F	3187 G		2462	14848	0121	00017	3331
0050	0414 L	32812		2606	14653	0174	00038	1966

C-HLFF-NU 369 YR 1962 DEPTH 265 WAVES 1 XX AIR T 14.9 VIS  
 CONS. NU C14 MONTH 9 MXSAMPC C2 WAVES 2 XX WET B 13.8 STN  
 LAT 43-530N DAY 27 NO.DPTH 9 WND-DIR WW-CODE  
 LUN 62-540W HR 22.8 W-COLOR WND-SPD CLD-TPL  
 MARSID SG 151 W-TRNSP BARO CLD-AMT HW

#### O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
221	0000	142 B				
223	0010	1420	31241		2327	15004
228	0020	1321	31332		2354	14973
228	0030	1378	31791		2481	14784
228	0049	0213	32443		2594	14561
228	0074	0366	33063		2630	14640
228	0098	0567	33741		2662	14737
228	0148	0786	34540		2695	14842
228	0246	0791	34701		2707	14862

#### I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1420 B	31241		2327	15002	0000	00000	4617
0010	1420	31241		2327	15004	0046	00002	4619
0020	1321	31332		2354	14973	0091	00009	4365
0030	1378	31791		2481	14784	0129	00019	3151
0050	0209 C	32470		2596	14560	0182	00039	2051
0075	0374	33092		2632	14644	0229	00069	1719
0100	0580	33786		2664	14743	0269	00104	1420
0125	0711 C	3425 D		2684	14806	0302	00142	1241
0150	0819 I	3464 I		2698	14856	0332	00184	1112
0175	0876 I	3486 I		2707	14885	0359	00229	1038
*0200	0886 G	3494 I		2711	14894	0385	00278	1003
*0225	0854 D	3487 E		2711	14885	0410	00334	1007
*0250	0772	3466 B		2706	14856	0436	00397	1052

C-REF-NO 369 YR 1962 DEPTH 146 WAVES 1 XX AIR T 13.6 VIS  
 CONS. NO 015 MONTH 9 MXSAMPD 01 WAVES 2 XX WLF B 12.8 STN  
 LAT 44-155N DAY 28 NO.DPTH 8 WND-DIR WW-CODE  
 LON 63-193W HR 03.4 W-COLOR WND-SPD CLD-TPE  
 MARSQ SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
031	0000	134	b			
034	0009	1324		30524	2291	14963
034	0019	1247		30625	2313	14939
034	0028	0610		31636	2491	14715
034	0047	0255		32236	2574	14577
034	0070	0226		32656	2610	14573
034	0094	0230		32853	2625	14582
034	0141	0550		33712	2662	14737

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	PUT.EN	SVA	
0000	1340	b	30524	2288	14967	0000	00000	4991	
0010	1333	c	3051	2288	14965	0050	00003	4991	
0020	1182	G	3073	F	2333	14918	0098	00010	4560
0030	0534	H	3175	G	2509	14686	0135	00019	2883
0050	0238	D	3230	7	2581	14571	0187	00039	2196
0075	0221		3270	C	2614	14573	0238	00072	1886
0100	0269	F	3305	I	2638	14603	0283	00111	1661
0125	0412	C	3345	I	2656	14673	0322	00157	1491

C-REF-NO 369 YR 1962 DEPTH 90 WAVES 1 XX AIR T 12.7 VIS  
 CONS. NO 016 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B 12.3 STN  
 LAT 44-237N DAY 28 NO.DPTH 6 WND-DIR WW-CODE  
 LON 63-286W HR 05.0 W-COLOR WND-SPD CLU-TPE  
 MARSID SQ 151 W-TRNSP BARO CLD-AMT HW

## O B S E R V E D

GM1	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
048	0000	122 B				
050	0009	1208	30673		2324	14925
050	0019	0976	30888		2381	14846
050	0028	0569	31514		2486	14697
050	0047	0361	31972		2544	14619
050	0070	0294	32255		2573	14598

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1220 B	30673		2322	14927	0000	00000	4663
0010	1195	30678		2327	14920	0047	00002	4618
0020	0931 C	3095 C		2393	14830	0090	00009	3989
0030	0523 G	3159 D		2498	14679	0125	00018	2991
0050	0353 L	32009		2548	14616	0180	00040	2514

REFERENCES

Knudsen, K., 1901                    Hydrographischen Tabellen. Copenhagen, 63 pp.

Ekman, V.W., 1908                    Die Zusammendrückbarkeit des Meerwassers nebst einigen Werten für Wasser und Quecksilber. Publ. Circ. Cons. Explor. Mer., No. 43, 47 pp.

Strickland, J.D.H.                    MS, 1958. Standard methods of seawater analyses. Volume II. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 19, 78 pp.

Strickland, J.D.H. and Parsons, T.R., 1960. A manual of seawater analysis. Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.

Wilson, W.D., 1960                    Equation for the speed of sound in seawater. Journ. Acoust. Soc., America 32 (10); p. 1357.

Rattray, M. Jr., 1962                    Interpolation errors and oceanographic sampling. Deep Sea Research. vol. 9, pp 25 to 37.

Sauer, C.D., and Fofonoff, N.P. . . . Oceans II, a computer program for processing oceanographic data (Publication pending).





CANADA



# SOUTHERN LABRADOR and GRAND BANKS—1963

No. 17  
1964 Data Record Series

Canadian Oceanographic Data Centre

Programmed by the  
Canadian Committee on Oceanography

1964

ROGER DUHAMEL, F. R. S. C.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1964

Cat. No. M58-1/1964-17

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

SOUTHERN LABRADOR to NORTHERN GRAND BANK

(CODC Reference: CRN 05-63-001 in Part I)  
(CODC Reference: CRN 05-63-002 in Part II)

No. 17

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography



PART I

CRN 05-63-001

by

M. V. "Investigator II"



FISHERIES RESEARCH BOARD OF CANADA

Part I

Flemish Cap and Northward to Seal Islands, Labrador

Ship: M. V. "Investigator II"

Local cruise designation: 006

Cruise period: July 27 - August 6, 1963

Observers: Mr. C. I. Barbour

Mr. J. Mullins

BIOLOGICAL STATION - St. John's Newfoundland



## **SECTION I**

**Description of data collection procedures**

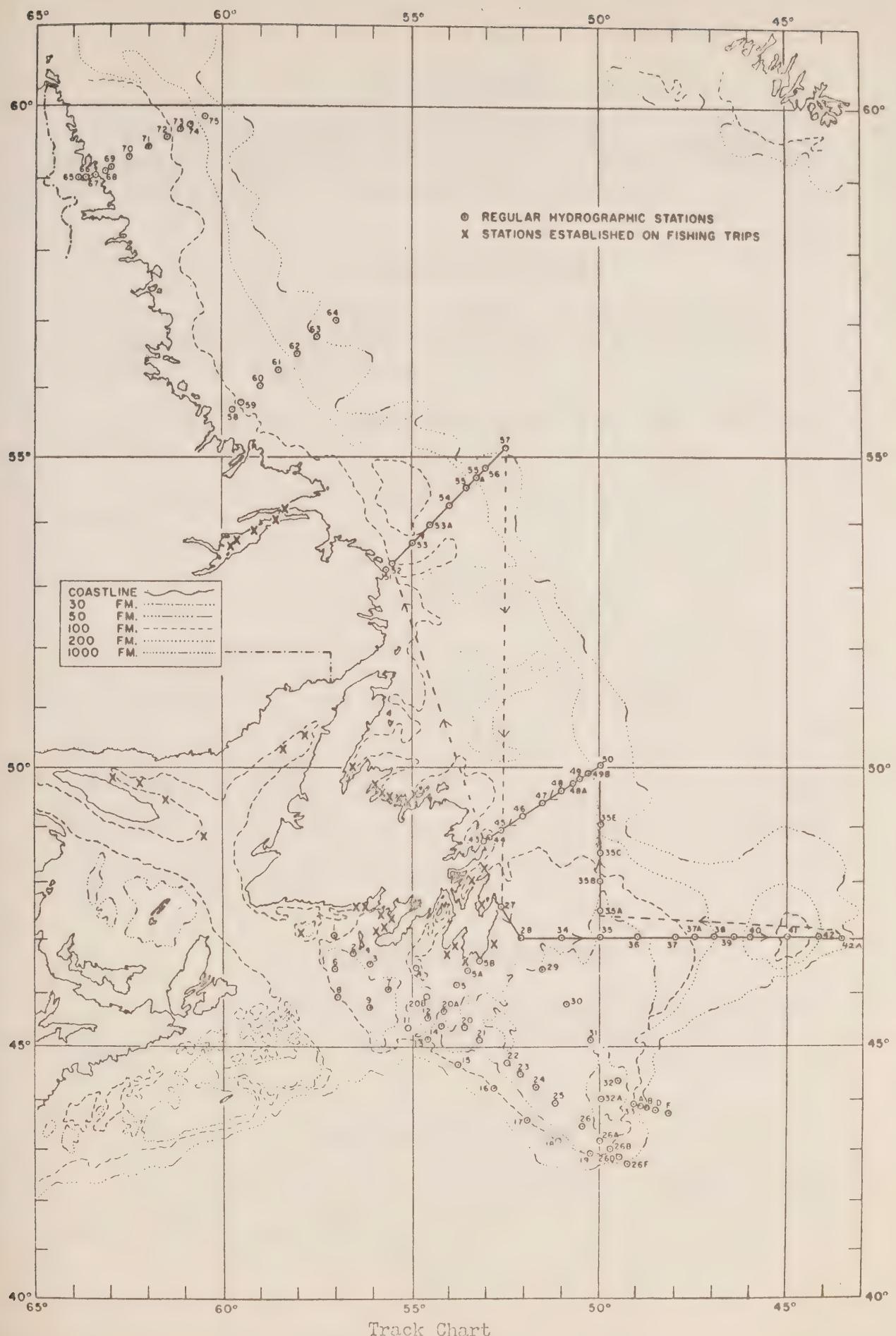


"INVESTIGATOR II"



Fisheries Research Board







## INTRODUCTION

Thirty-seven Oceanographic Stations were occupied in an area from St. John's to the Flemish Cap and northward to Seal Islands, Labrador (see track chart) to obtain B. T., temperature and salinity data.

## EXTRACT OF CRUISE LOG

Departed from St. John's on July 27. Occupied stations to the Flemish Cap and northward to Station 43 off Cape Bonavista, arriving at Valleyfield on the evening of August 2.

Left Valleyfield on August 3 and proceeded to the line off Seal Islands, Labrador.

Completed all observations on August 6, and arrived at St. John's August 8.

## OBSERVATION PROCEDURES

At each station water samples were obtained from surface to bottom (or greatest depth to 1000 metres) at standard depth intervals. Nansen type reversing water bottles were used, each bottle being equipped with two protected reversing thermometers. In addition, an unprotected thermometer was used on the lowest bottle, one on the highest and another on an intermediate bottle of each cast below 100 metres. All thermometers were read by two observers and any doubtful temperatures were checked using different thermometers. B.T. casts were made at each station and between stations especially in the inshore and offshore areas to determine the extent of the inner and outer branches of the Labrador Current.

## LABORATORY PROCEDURES

Temperature and depth corrections were applied, and salinity results were obtained by titration methods using silver nitrate as a standard solution.

## BATHYTHERMOGRAPH DATA

B.T. slides are processed at the Bedford Institute of Oceanography, Dartmouth, N.S. B.T. Data may be obtained from the above institution by referring to B.T. Cruise No. INV-45

PERSONNEL

1. C. I. Barbour (Technician-in-Charge)  
J. Mullins  
Sea Observers
2. A. G. Kelland  
G. Kean  
Technicians  
engaged in  
laboratory work.

## SECTION II

Description of the machine-generated data record



## INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a **standard deviation** ( $\sigma$ ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "GENERAL INFORMATION" of section II of the data record.

The **measurement error estimate** of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e.,  $1\sigma = A$ ,  $2\sigma = B$ , etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "**interpolation error estimate**" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O<sub>2</sub>) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "**measurement error estimate**" comprises the "**combined measurement and interpolation error estimate**". It is expressed as a multiple of the standard deviation of measurement ( $\sigma$ ) under normal routine field conditions by:

CANADIAN OCEANOGRAPHIC DATA CENTRE

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left( \frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2}, \text{ where}$$

$\sigma_i$  = Standard deviation of the combined error estimates at standard oceanographic depth,  
 $\Delta V_i$  = the interpolation error estimate of variable "V" at standard oceanographic depth =  $^{1/3} (V_{i_1} - V_{i_2})$   
 $\gamma$  = Interpolation polynomial coefficient.  
 $Z_j$  = Observed depth.  
 $Z_i$  = Standard oceanographic depth, such that:  $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction  $\frac{\sigma}{\sigma}$ , if  $\geq 2$ , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.).

With respect to the interpolated value of the salinity variable if reported to three decimal digits, the **interpolation error estimate** is given only when  $\frac{\sigma}{\sigma} \geq 2$  (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

## EXPLANATION OF DATA RECORD HEADINGS

### MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFER-  
ENCE NUMBER: Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE  
NUMBER: Indicates the chronological order in which the stations were occupied.

(3) LATITUDE: Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.  
It is reported to tenths of hours (Table 1).  
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM  
SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).  
00 m - 50 m = 00  
51 m - 150 m = 01  
151 m - 250 m = 02  
etc.

## (12) NUMBER OF

DEPTHS:

The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

## (13) WATER COLOUR:

A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).

## (14) WATER

TRANSPARENCY:

The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;

**NOTE:** The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.

## (15) WAVES 1

(d<sub>w</sub>d<sub>w</sub>P<sub>w</sub>H<sub>w</sub>-code):

The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

## (16) WAVES 2

(d<sub>w</sub>d<sub>w</sub>P<sub>w</sub>H<sub>w</sub>-code):

The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

## (17) WIND DIRECTION:

The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.

## (18) WIND FORCE

(WND-FCE):

Beaufort Notation (See Table 6).

WIND SPEED

(WND-SPD):

Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.

## (19) BAROMETER:

The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

## (20) AIR

TEMPERATURE:

In degrees Celsius.

## (21) WET BULB:

In degrees Celsius.

## (22) ww CODE:

Present Weather Code (See Table 7). Ref: WMO Code 4677

## (23) CLOUD TYPE:

The type of predominating clouds (See Table 8). Ref: WMO Code 0500.

## (24) CLOUD AMOUNT:

The sky coverage in eighths (See Table 9) Ref: WMO Code 2700

## (25) VISIBILITY:

Visibility at the surface (See Table 10). Ref: WMO Code 4300.

## (26) STATION:

A station reference number, assigned by the institute prior to, or during the survey.

(27) HOURS AFTER  
HIGH WATER:

Indicates the state of the tide for nearshore observations.

## OBSERVED DATA HEADINGS

(1) <i>GMT</i>	(2) <i>DEPTH</i>	(3) <i>TEMP</i>	(4) <i>SAL</i>	(5) <i>OXYGEN</i>	(6) <i>SGMT</i>
(7) <i>SOUND</i>	(8) <i>PO<sub>4</sub></i>	(9) -P-	(10) <i>NO<sub>2</sub></i>	(11) <i>NO<sub>3</sub></i>	(12) <i>SiO<sub>3</sub></i>
					(13) <i>pH.</i>

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.

(3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section. An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) SALINITY: Salinity as defined by:  $S = 0.03 + 1.805 C1\%$ , reported in:  
a. 1/100 parts per 1000, or  
b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)

In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.  
An alphabetical character following the value is the measurement error estimate as referred to under (3).

(6) SIGMA-T: The specific gravity anomaly as defined by:  $(\text{Specific gravity} - 1) \times 10^3$  (e.g.,  $\sigma_t$  reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO <sub>4</sub>	Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO <sub>2</sub>	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre - No dissolved nitrogen included -
(11) NO <sub>3</sub>	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO <sub>2</sub>	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

#### INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

(1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "INTRODUCTION" to section II of the data record).

(3) SALINITY:

- A. The reported salinity values are observed to three decimal places.
  - (i) the interpolation error estimate is less than twice the standard deviation of measurement
    - the interpolated value is reported to three decimal places (e.g., 30.139).
  - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
    - the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).
- B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
  - the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P \delta dp$$

$\Delta D$  is expressed in dynamic metres ( $10^5$  ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL ENERGY ANOMALY: The Potential energy anomaly  $\chi$  as defined by:

$$\chi = 1/g \int_0^P p \delta dp = \int_0^Z \rho p \delta dz$$

$\chi$  is expressed in units of  $10^8$  ergs/cm<sup>2</sup> and recorded to two decimal places (e.g., 116.44).

(9) SPECIFIC VOLUME ANOMALY: The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35.0.P}$$

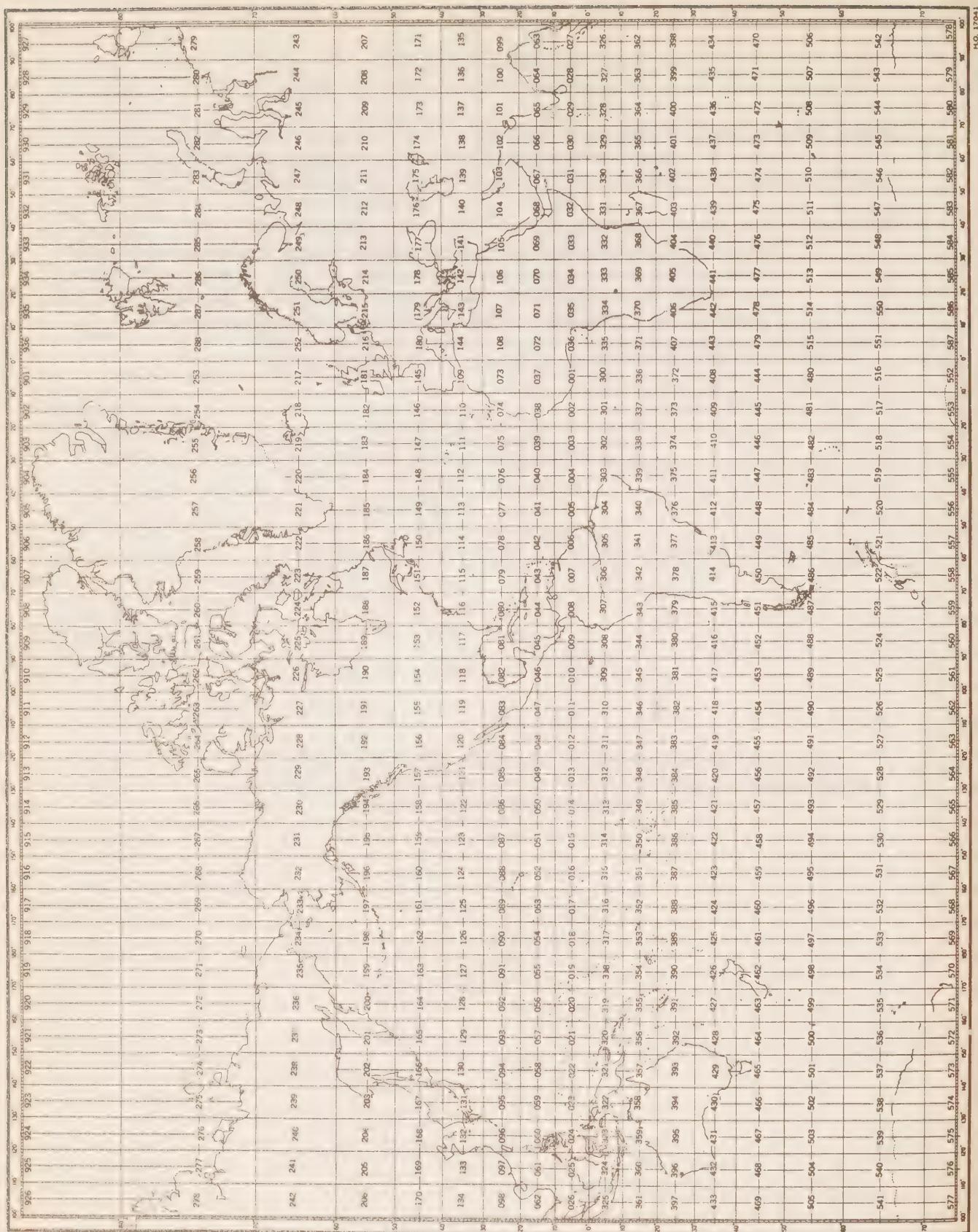
$\delta$  is expressed in ml/gr, and conventionally reported as  $10^5 \delta$ , to one decimal place (i.e.,  $\delta$  reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

## SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs

\* (Asterisk): this character may occur in the **interpolated** portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one **observed depth interval**. The third, and all consequent levels within that interval are preceded by the asterisk to indicate that more than **two** machine interpolations were carried out, utilizing the same set of interpolation parabolas.

## MARSDEN SQUARE CHART



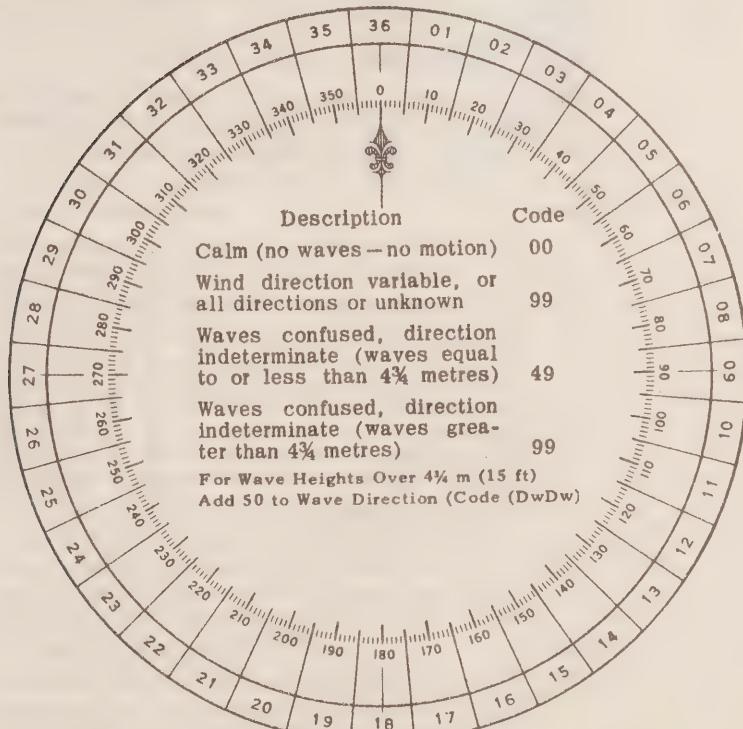
**Table 1**  
**CONVERSION**  
**MINUTES TO  $\frac{1}{10}$  HRS.**

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

**Table 2**  
**WATER COLOR CODE**  
**Based on Percentage Yellow**

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

**Table 3. DIRECTION CODE (dd)**



**NOTE:**

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

**Table 4. PERIOD OF THE WAVES (P<sub>w</sub>)**  
**(Measure to the Nearest Second)**

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

**Table 5. HEIGHT OF THE WAVES (H<sub>w</sub>)**

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 =  $\frac{1}{4}$  m (1 ft) to  $\frac{3}{4}$  m (2½ ft); 5 =  $2\frac{1}{4}$  m (7 ft) to  $2\frac{3}{4}$  m (9 ft); 9 =  $4\frac{1}{4}$  m (13½ ft) to  $4\frac{3}{4}$  m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of  $2\frac{3}{4}$  m is reported by code figure 5.

Code	Code
0 Less than $\frac{1}{4}$ m (1 ft)	0 5 m (16 ft)
1 $\frac{1}{2}$ m ( 1½ ft)	1 $5\frac{1}{4}$ m (17½ ft)
2 1 m ( 3 ft)	2 6 m (19 ft)
3 $1\frac{1}{2}$ m ( 5 ft)	Add 3 $6\frac{1}{4}$ m (21 ft)
4 2 m ( 6½ ft)	50 4 7 m (22½ ft)
5 $2\frac{1}{2}$ m ( 8 ft)	to 5 $7\frac{1}{2}$ m (24 ft)
6 3 m ( 9½ ft)	Dw Dw 6 8 m (25½ ft)
7 $3\frac{1}{2}$ m (11 ft)	7 $8\frac{1}{4}$ m (27 ft)
8 4 m (13 ft)	8 9 m (29 ft)
9 $4\frac{1}{2}$ m (14 ft)	9 $9\frac{1}{4}$ m (30½ ft) or more
x Height not determined	

**Table 6. WIND FORCE CODE**

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER  
W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

No meteors except photometeors	Code figure ww	characteristic change of the state of sky during the past hour	ww = 20 - 29	
			Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	not falling as shower(s)
	00	Cloud development not ob- served or not observable	20	Drizzle (not freezing) or snow grains
	01	Clouds generally dissolving or becoming less developed	21	Rain (not freezing)
	02	State of sky on the whole unchanged	22	Snow
	03	Clouds generally forming or developing	23	Rain and snow or ice pellets, type (a)
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	24	Freezing drizzle or freezing rain
	05	Haze	25	Shower(s) of rain
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	26	Shower(s) of snow, or of rain and snow
	07	Dust or sand raised by wind at or near the sta- tion at the time of observation, but no well de- veloped dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	27	Shower(s) of hail, or of rain and hail
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preced- ing hour or at the time of observation, but no duststorm or sandstorm	28	Fog or ice fog
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the pre- ceding hour	29	Thunderstorm (with or without precipitation)
	10	Mist	ww = 30 - 39	Duststorm, sandstorm, drifting or blowing snow
	11	Patches of shallow fog or ice fog at the sta- tion, whether on land or sea, not	30	- has decreased during the preceding hour
	12	More or less continuous deeper than about 2 metres on land or 10 metres at sea	31	- no appreciable change during the preceding hour
	13	Lightning visible, no thunder heard	32	- has begun or has increased during the preceding hour
	14	Precipitation within sight, not reaching the ground or the surface of the sea	33	- has decreased during the preceding hour
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e., es- timated to be more than 5 km) from the station	34	- no appreciable change du- ring the preceding hour
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	35	- has begun or has increased during the preceding hour
	17	Thunderstorm, but no precipitation at the time of observation	36	Slight or moderate } generally low (below eye blowing snow } level)
	18	Squalls at or within sight of the sta- tion during the preceding hour	37	Heavy drifting snow
	19	Funnel clouds or at the time of observation	38	Slight or moderate } generally high (above eye blowing snow } level)
			39	Heavy blowing snow
			ww = 40 - 49	Fog or ice fog at the time of observation
	40	Fog or ice fog at a distance at the time of ob- servation, but not at the station during the pre- ceding hour, the fog or ice fog extending to a level above that of the observer	40	Fog or ice fog at the time of ob- servation
	41	Fog or ice fog in patches	41	Fog or ice fog in patches
	42	Fog or ice fog, sky visible	42	Fog or ice fog, sky visible
	43	Fog or ice fog, sky invisible	43	Fog or ice fog, sky invisible
	44	Fog or ice fog, sky visible	44	Fog or ice fog, sky visible
	45	Fog or ice fog, sky invisible	45	Fog or ice fog, sky invisible
	46	Fog or ice fog, sky visible	46	Fog or ice fog, sky visible
	47	Fog or ice fog, sky invisible	47	Fog or ice fog, sky invisible
	48	Fog, depositing rime, sky visible	48	Fog, depositing rime, sky visible
	49	Fog, depositing rime, sky invisible	49	Fog, depositing rime, sky invisible

## PRECIPITATION ON STATION AT TIME OF OBSERVATION

**ww = 50 - 59 Drizzle**

50	Drizzle, not freezing, intermittent	slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	moderate at time of observation
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	heavy (dense) at time of observation
55	Drizzle, not freezing, continuous	
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

**ww = 60 - 69 Rain**

60	Rain, not freezing, intermittent	slight at time of observation
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	moderate at time of observation
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	heavy at time of observation
65	Rain, not freezing, continuous	
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

**70 - 79 Solid precipitation not in showers**

70	Intermittent fall of snow flakes	slight at time of observation
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	moderate at time of observation
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	heavy at time of observation
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

**ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm**

80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain	- slight - moderate or heavy
88	or rain and snow mixed	
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	- slight - moderate or heavy
90		
91	Slight rain at time of observation	
92	Moderate or heavy rain at time of observation	thunderstorm during the preceding hour but not at time of observation
93	Slight snow, or rain and snow mixed or hail at time of observation	
94	Moderate or heavy snow, or rain and snow mixed or hail at time of observation	
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	
96	Thunderstorm, slight or moderate, with hail at time of observation	
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	thunderstorm at time of observation
98	Thunderstorm, combined with duststorm or sandstorm at time of observation	
99	Thunderstorm, heavy, with hail at time of observation	

**Table 8. CLOUD TYPE CODE**

Code	Cloud Type	Code	Cloud Type
0	Cirrus .....	Cl	Nimbostratus .....
1	Cirrocumulus .....	Cc	Stratocumulus .....
2	Cirrostratus .....	Cs	Stratus .....
3	Altocumulus .....	Ac	Cumulus .....
4	Altostratus .....	As	Cumulonimbus .....
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

**Table 9. CLOUD AMOUNT CODE**

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta =  $\frac{1}{8}$  of the sky covered

**Table 10. VISIBILITY**

Code	Estimate of hor. Visibility
0	Less than 50 metres (less than 55 yards)
1	50–200 metres (approx. 55–220 yards)
2	200–500 metres (approx. 220–550 yards)
3	500–1,000 metres (approx. 550 yards– $\frac{5}{8}$ n.m.)
4	1–2 km (approx. $\frac{5}{8}$ –1 n.m.)
5	2–4 km (approx. 1–2 n.m.)
6	4–10 km (approx. 2–6 n.m.)
7	10–20 km (approx. 6–12 n.m.)
8	20–50 km (approx. 12–30 n.m.)
9	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

<u>Institute:</u>	Biological Station, St. John's, Newfoundland
<u>Observation platform:</u>	M. V. "Investigator II"
<u>Vessel's cruising speed:</u>	9 knots
<u>Total number of stations occupied:</u>	37
<u>Barometer readings</u>	obtained using an Aneroid Barometer and are not corrected
<u>Air temperature</u>	observed from a sling psychrometer
<u>Wet Bulb temperature</u>	observed from a sling psychrometer
<u>Surface sea water temperature</u>	obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.09
Salinity	0.08



### SECTION III

Serial oceanographic data



C-REF-NO 001 YR 1963 DEPTH 175 WAVES 1 1720 AIR T 17.2 VIS 96  
 CONS. NO 001 MONTH 7 MXSAMPD 02 WAVES 2 0418 WET B 16.9 STN 027  
 LAT 47-328N DAY 27 NO.DPTH 9 WND-DIR 160 WW-CODE 02  
 LON 52-352W HR 19.5 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1009.1 CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0000	136	3187		2387	14990
195	0010	1183	3187		2421	14931
195	0020	1078	3189		2442	14896
195	0030	0292	3250		2592	14594
195	0050	-0051	3284		2641	14448
195	0075	-0131	3287		2646	14415
195	0100	-0133	3298		2655	14419
195	0150	-0117	3312		2666	14437
195	0173	-0069	3324		2674	14465

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1360	3187		2387	14990	0000	00000	4039
0010	1183	3187		2421	14931	0039	00002	3717
0020	1078	3189		2442	14896	0075	00007	3525
0030	0292	3250		2592	14594	0104	00014	2091
0050	-0051	3284		2641	14448	0141	00029	1626
0075	-0131	3287		2646	14415	0181	00055	1575
0100	-0133	3298		2655	14419	0220	00089	1488
0125	-0134	3305		2660	14424	0257	00132	1435
0150	-0117	3312		2666	14437	0292	00182	1382
0175	-0065	3325		2674	14468	0326	00238	1302

C-REF-NO 001 YR 1963 DEPTH 145 WAVES 1 1723 AIR T 14.4 VIS 93  
 CONS. NO 002 MONTH 7 MXSAMPD 01 WAVES 2 0418 WET B 13.6 STN 028  
 LAT 47-00ON DAY 28 NO.DPTH 8 WND-DIR 180 WW-CODE 10  
 LON 52-02OW HR 00.9 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1007.4 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
009	0000	116	3226		2456	14926
009	0010	1148	3225		2457	14924
009	0020	0757	3239		2531	14782
009	0030	0090	3288		2637	14509
009	0050	-0118	3303		2658	14419
009	0075	-0134	3306		2661	14416
009	0100	-0123	3315		2668	14427
009	0143	-0020	3340		2685	14485

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1160	3226		2456	14926	0000	00000	3387
0010	1148	3225		2457	14924	0034	00002	3375
0020	0757	3239		2531	14782	0064	00006	2675
0030	0090	3288		2637	14509	0086	00012	1663
0050	-0118	3303		2658	14419	0118	00024	1457
0075	-0134	3306		2661	14416	0154	00047	1428
0100	-0123	3315		2668	14427	0189	00079	1361
0125	-0074	3328		2677	14455	0222	00117	1280

C-REF-NO 001 YR 1963 DEPTH 110 WAVES 1 2646 AIR T 13.8 VIS 90  
 CONS. NO 003 MONTH 7 MXSAMPD 01 WAVES 2 0418 WET B 13.3 STN 034  
 LAT 47-000N DAY 28 NO.DPTH 7 WND-DIR 270 WW-CODE 20  
 LON 51-000W HR 05.6 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1005.0 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
056	0000	111	3239		2475	14910
056	0010	1092	3239		2478	14905
056	0020	1031	3243		2492	14886
056	0030	0666	3257		2557	14750
056	0050	0027	3290		2642	14484
056	0075	-0116	3310		2664	14425
056	0108	-0006	3337		2682	14485

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1110	3239		2475	14910	0000	00000	3205
0010	1092	3239		2478	14905	0032	00002	3177
0020	1031	3243		2492	14886	0063	00006	3049
0030	0666	3257		2557	14750	0091	00013	2424
0050	0027	3290		2642	14484	0132	00029	1614
0075	-0116	3310		2664	14425	0170	00053	1403
0100	-0124 C	3333		2683	14429	0203	00083	1222

C-REF-NO 001 YR 1963 DEPTH 88 WAVES 1 2446 AIR T 11.9 VIS 93  
 CONS. NO 004 MONTH 7 MXSAMPD 01 WAVES 2 0376 WET B 11.6 STN 035  
 LAT 47-000N DAY 28 NO.DPTH 7 WND-DIR 240 WW-CODE 14  
 LON 50-000W HR 10.8 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1003.3 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
108	0000	101	3263		2511	14877
108	0010	1007	3265		2513	14878
108	0020	0987	3265		2516	14872
108	0030	0678	3274		2569	14757
108	0050	0185	3290		2632	14555
108	0075	-0020	3324		2672	14472
108	0086	-0019	3331		2677	14475

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1010	3263		2511	14877	0000	00000	2864
0010	1007	3265		2513	14878	0029	00001	2846
0020	0987	3265		2516	14872	0057	00006	2816
0030	0678	3274		2569	14757	0083	00012	2312
0050	0185	3290		2632	14555	0123	00028	1708
0075	-0020	3324		2672	14472	0162	00052	1332

C-REF-NO 001 YR 1963 DEPTH 84 WAVES 1 2846 AIR T 12.2 VIS 93  
 CONS. NO 005 MONTH 7 MXSAMPD 01 WAVES 2 0266 WET B 11.6 STN 036  
 LAT 47-000N DAY 28 NO.DPTH 7 WND-DIR 280 WW-CODE 10  
 LON 49-000W HR 16.3 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1005.7 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
163	0000	102	3250		2499	14879
163	0010	1010	3250		2501	14877
163	0020	1008	3250		2501	14878
163	0030	0584	3272		2580	14719
163	0050	0043	3301		2650	14493
163	0075	-0045	3330		2678	14461
163	0082	-0038	3330		2677	14465

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1020	3250		2499	14879	0000	00000	2976
0010	1010	3250		2501	14877	0030	00002	2962
0020	1008	3250		2501	14878	0060	00006	2961
0030	0584	3272		2580	14719	0086	00013	2214
0050	0043	3301		2650	14493	0123	00027	1538
0075	-0045	3330		2678	14461	0159	00050	1275

C-REF-NO 001 YR 1963 DEPTH 137 WAVES 1 2236 AIR T 10.8 VIS 96  
 CONS. NO 006 MONTH 7 MXSAMPD 01 WAVES 2 2246 WET B 10.2 STN 037  
 LAT 47-000N DAY 28 NO.DPTH 8 WND-DIR 020 WW-CODE 14  
 LON 48-000W HR 21.8 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1009.1 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
218	0000	098	3250		2506	14865
218	0010	0981	3250		2506	14867
218	0020	0945	3252		2513	14855
218	0030	0500	3275		2592	14685
218	0050	-0047	3297		2651	14451
218	0075	-0111	3306		2661	14427
218	0100	-0095	3321		2672	14441
218	0135	0004	3346		2688	14496

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0980	3250		2506	14865	0000	00000	2913
0010	0981	3250		2506	14867	0029	00002	2916
0020	0945	3252		2513	14855	0058	00006	2847
0030	0500	3275		2592	14685	0083	00012	2098
0050	-0047	3297		2651	14451	0120	00027	1528
0075	-0111	3306		2661	14427	0157	00050	1435
0100	-0095	3321		2672	14441	0192	00081	1324
0125	-0038	3338		2684	14473	0224	00118	1216

C-REF-NO 001 YR 1963 DEPTH 192 WAVES 1 2236 AIR T 10.2 VIS 96  
 CONS. NO 007 MONTH 7 MXSAMPD 02 WAVES 2 2246 WET B 09.9 STN 37A  
 LAT 47-000N DAY 29 NO.DPTH 9 WND-DIR 360 WW-CODE 10  
 LON 47-300W HR 00.8 W-COLOR WND-FCE 04 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1012.5 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
008	0000	095	3225		2491	14850
008	0010	0942	3225		2492	14849
008	0020	0938	3234		2500	14850
008	0030	0901	3238		2509	14839
008	0050	-0054	3290		2646	14447
008	0075	-0126	3297		2654	14419
008	0100	-0128	3304		2660	14423
008	0150	-0036	3351		2694	14480
008	0190	0075	3378		2710	14541

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0950	3225		2491	14850	0000	00000	3052
0010	0942	3225		2492	14849	0031	00002	3041
0020	0938	3234		2500	14850	0061	00006	2970
0030	0901	3238		2509	14838	0090	00014	2887
0050	-0054	3290		2646	14447	0135	00031	1579
0075	-0126	3297		2654	14419	0174	00056	1499
0100	-0128	3304		2660	14423	0211	00089	1443
0125	-0093	3326		2676	14446	0245	00128	1288
0150	-0036	3351		2694	14480	0276	00171	1116
0175	0023	3364		2702	14514	0303	00216	1045

C-REF-NO 001 YR 1963 DEPTH 805 WAVES 1 0235 AIR T 09.7 VIS 92  
 CONS. NO 008 MONTH 7 MXSAMPD 07 WAVES 2 2235 WET B 09.1 STN 038  
 LAT 47-00ON DAY 29 NO.DPTH 15 WND-DIR 020 WW-CODE 40  
 LON 47-00OW HR 04.0 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1014.2 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
044	0000	095	3207		2477	14848
044	0010	0953	3207		2477	14851
044	0020	0961	3209		2477	14856
044	0030	0343	3283		2614	14620
044	0050	-0003	3310		2660	14473
044	0075	-0075	3333		2681	14447
044	0095	0021	3369		2706	14500
044	0145	0174	3404		2724	14582
044	0190	0231	3410		2725	14615
044	0235	0258	3425		2735	14636
044	0280	0302	3443		2745	14665
040	0360	0361	3470		2761	14707
040	0455	0366	3470		2760	14725
040	0650	0377	3478		2766	14763
040	0730	0375	3478		2766	14776

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0950	3207		2477	14848	0000	00000	3185
0010	0953	3207		2477	14851	0032	00002	3192
0020	0961	3209		2477	14856	0064	00007	3191
0030	0343	3283		2614	14620	0090	00013	1885
0050	-0003	3310		2660	14473	0123	00026	1447
0075	-0075	3333		2681	14447	0157	00047	1241
0100	0041	3375		2710	14511	0185	00072	0974
0125	0126	3397		2722	14556	0208	00099	0862
0150	0183	3405		2725	14587	0230	00129	0838
0175	0218	3409		2725	14607	0251	00164	0838
0200	0238	3413		2727	14620	0272	00204	0825
0225	0253	3421		2732	14632	0292	00248	0776
0250	0272	3431		2738	14646	0311	00294	0721
0300	0320	3451		2750	14678	0344	00389	0616
0400	0367	3472		2762	14717	0402	00592	0516
0500	0369	3472		2762	14734	0454	00836	0528
0600	0375	3476		2764	14754	0507	01133	0512
0700	0375	3477		2765	14771	0559	01479	0511

C-REF-NO 001 YR 1963 DEPTH 750 WAVES 1 0245 AIR T 08.3 VIS 97  
 CONS. NO 009 MONTH 7 MXSAMPD 07 WAVES 2 0255 WET B 07.4 STN 039  
 LAT 47-000N DAY 29 NO.DPTH 15 WND-DIR 020 WW-CODE 14  
 LON 46-300W HR 08.5 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1017.2 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
093	0000	085	3256		2531	14817
093	0010	0904	3259		2525	14839
093	0020	0915	3261		2525	14845
093	0030	0720	3369		2638	14786
093	0050	0454	3393		2690	14685
093	0075	0295	3411		2720	14624
093	0100	0268	3427		2735	14619
093	0150	0293	3443		2746	14640
085	0175	0361	3458		2751	14675
085	0220	0392	3472		2759	14698
085	0260	0379	3472		2761	14699
085	0350	0379	3472		2761	14714
085	0435	0389	3474		2761	14732
085	0530	0373	3474		2763	14741
085	0685	0361	3474		2764	14762

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0850	3256		2531	14817	0000	00000	2674
0010	0904	3259		2525	14839	0027	00001	2732
0020	0915	3261		2525	14845	0055	00006	2735
0030	0720	3369		2638	14786	0077	00011	1658
0050	0454	3393		2690	14685	0105	00022	1166
0075	0295	3411		2720	14624	0131	00038	0880
0100	0268	3427		2735	14619	0151	00056	0738
0125	0265	3435		2742	14623	0169	00077	0675
0150	0293	3443		2746	14640	0186	00100	0642
0175	0361	3458		2751	14675	0201	00126	0595
0200	0388	3468		2756	14692	0216	00154	0552
0225	0391	3472		2760	14698	0229	00184	0522
0250	0384	3473		2761	14699	0243	00215	0515
0300	0376	3472		2761	14704	0269	00289	0517
0400	0386	3473		2761	14725	0321	00479	0526
0500	0379	3474		2762	14739	0374	00724	0522
0600	0374	3475		2763	14753	0427	01022	0522
0700	0358	3474		2764	14763	0479	01373	0518

C-REF-NO 001 YR 1963 DEPTH 324 WAVES 1 0135 AIR T 08.0 VIS 97  
 CONS. NO 010 MONTH 7 MXSAMPD 03 WAVES 2 0244 WET B 07.7 STN 040  
 LAT 47-000N DAY 29 NO.DPTH 12 WND-DIR 010 WW-CODE 02  
 LON 46-000W HR 13.0 W-COLOR WND-FCE 05 CLD-TPE  
 MARSID SQ 149 W-TRNSP BARO 1020.9 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
130	0000	110	3364		2574	14922
130	0010	1110	3364		2572	14928
130	0018	1119	3364		2570	14932
130	0027	1064	3369		2584	14915
130	0045	0578	3396		2678	14736
130	0070	0410	3411		2709	14672
130	0090	0388	3423		2721	14668
130	0135	0397	3451		2742	14683
130	0180	0410	3467		2753	14698
130	0230	0396	3472		2759	14701
130	0270	0374	3472		2761	14698
130	0290	0380	3474		2762	14704

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1100	3364		2574	14922	0000	00000	2265
0010	1110	3364		2572	14928	0023	00001	2284
0020	1115	3365		2572	14931	0046	00005	2291
0030	0990 B	3373		2600	14889	0068	00010	2022
0050	0515 B	3400		2689	14711	0100	00023	1178
0075	0399	3414		2713	14669	0127	00039	0954
0100	0386	3430		2726	14670	0149	00059	0826
0125	0391	3445		2738	14678	0169	00082	0716
0150	0402	3458		2747	14689	0186	00106	0637
0175	0409	3466		2753	14697	0201	00131	0585
0200	0407	3470		2756	14700	0215	00159	0553
0225	0398	3472		2759	14701	0229	00189	0533
0250	0383	3472		2760	14699	0242	00221	0519

C-REF-NO 001 YR 1963 DEPTH 161 WAVES 1 0135 AIR T 09.1 VIS 97  
 CONS. NO 011 MONTH 7 MXSAMPD 02 WAVES 2 0244 WET B 08.3 STN 041  
 LAT 47-000N DAY 29 NO.DPTH 8 WND-DIR 010 WW-CODE 03  
 LON 45-000W HR 19.1 W-COLOR WND-FCE 02 CLD-TPE  
 MARSID SQ 149 W-TRNSP BARO 1023.3 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
191	0000	107	3384		2595	14914
191	0010	1069	3384		2595	14916
191	0020	1067	3384		2595	14917
191	0030	0659	3387		2661	14764
191	0050	0476	3400		2693	14695
191	0075	0376	3416		2716	14659
191	0100	0339	3431		2732	14650
191	0155	0369	3443		2739	14673

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1070	3384		2595	14914	0000	00000	2067
0010	1069	3384		2595	14916	0021	00001	2067
0020	1067	3384		2595	14917	0042	00004	2066
0030	0659	3387		2661	14764	0059	00009	1445
0050	0476	3400		2693	14695	0085	00019	1136
0075	0376	3416		2716	14659	0111	00035	0917
0100	0339	3431		2732	14650	0132	00054	0771
0125	0322	3438		2739	14648	0151	00075	0703
0150	0357	3443		2740	14667	0169	00101	0704

C-REF-NO 001 YR 1963 DEPTH 503 WAVES 1 0143 AIR T 09.4 VIS 93  
 CONS. NO 012 MONTH 7 MXSAMPD 05 WAVES 2 0253 WET B 08.6 STN 042  
 LAT 47-000N DAY 30 NO.DPTH 13 WND-DIR 010 WW-CODE 02  
 LON 43-540W HR 02.0 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1026.0 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
023	0000	102	3410		2624	14900
023	0010	1031	3403		2616	14904
023	0020	1039	3407		2618	14909
023	0030	0981	3403		2625	14889
023	0050	0374	3431		2729	14657
023	0075	0311	3447		2747	14636
023	0100	0308	3456		2755	14640
023	0150	0384	3470		2759	14682
020	0200	0397	3483		2768	14698
020	0250	0391	3483		2768	14704
020	0300	0377	3483		2770	14706
020	0400	0373	3485		2772	14721
020	0500	0358	3487		2775	14732

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1020	3410		2624	14900	0000	00000	1792
0010	1031	3403		2616	14904	0018	00001	1864
0020	1039	3407		2618	14909	0037	00004	1850
0030	0981	3403		2625	14889	0055	00009	1787
0050	0374	3431		2729	14657	0081	00018	0800
0075	0311	3447		2747	14636	0099	00029	0623
0100	0308	3456		2755	14640	0114	00043	0554
0125	0343	3463		2757	14660	0128	00058	0533
0150	0384	3470		2759	14682	0141	00077	0526
0175	0396	3477		2763	14693	0154	00098	0484
0200	0397	3483		2768	14698	0166	00121	0446
0225	0396	3484		2768	14702	0177	00145	0441
0250	0391	3483		2768	14704	0188	00173	0445
0300	0377	3483		2770	14706	0210	00235	0435
0400	0373	3485		2772	14721	0254	00391	0425
0500	0358	3487		2775	14732	0296	00584	0403

C-REF-NO 001 YR 1963 DEPTH 1024 WAVES 1 0143 AIR T 09.1 VIS 92  
 CONS. NO 013 MONTH 7 MXSAMPD 10 WAVES 2 0242 WET B 08.0 STN 42A  
 LAT 47-000N DAY 30 NO.DPTH 16 WND-DIR 020 WW-CODE 02  
 LON 43-280W HR 04.8 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1026.7 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
055	0000	102	3425		2635	14902
055	0010	1026	3425		2634	14905
055	0020	0986	3425		2641	14892
055	0030	0724	3438		2692	14797
055	0050	0478	3456		2737	14703
055	0075	0390	3465		2754	14672
055	0098	0365	3467		2758	14665
055	0148	0351	3472		2763	14668
055	0195	0350	3483		2772	14677
055	0245	0358	3483		2772	14689
055	0295	0356	3485		2773	14697
048	0390	0357	3487		2775	14713
048	0480	0355	3487		2775	14727
048	0580	0353	3487		2775	14743
048	0780	0340	3490		2779	14771
048	0975	0350	3492		2780	14808

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1020	3425		2635	14902	0000	00000	1681
0010	1026	3425		2634	14905	0017	00001	1693
0020	0986	3425		2641	14892	0034	00003	1630
0030	0724	3438		2692	14797	0048	00007	1149
0050	0478	3456		2737	14703	0067	00014	0718
0075	0390	3465		2754	14672	0083	00024	0562
0100	0364	3467		2758	14665	0096	00037	0523
0125	0353	3469		2761	14665	0109	00051	0499
0150	0351	3473		2764	14669	0122	00069	0474
0175	0349	3479		2769	14673	0133	00088	0429
0200	0351	3483		2772	14678	0143	00108	0398
0225	0355	3484		2772	14684	0153	00130	0401
0250	0358	3483		2772	14690	0164	00155	0410
0300	0356	3485		2773	14697	0184	00212	0397
0400	0357	3487		2775	14715	0224	00356	0393
0500	0355	3487		2775	14730	0264	00541	0400
0600	0351	3487		2776	14745	0304	00770	0403
0700	0345	3489		2777	14759	0345	01039	0393
0800	0345	3490		2778	14776	0385	01348	0396

C-REF-NO 001 YR 1963 DEPTH 93 WAVES 1 2155 AIR T 12.4 VIS 90  
 CONS. NO 014 MONTH 7 MXSAMPD 01 WAVES 2 2155 WET B 12.2 STN 35A  
 LAT 47-300N DAY 31 NO.DPTH 7 WND-DIR 210 WW-CODE 12  
 LON 50-000W HR 12.6 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
126	0000	101	3257		2506	14876
126	0010	0992	3263		2514	14872
126	0020	1001	3263		2512	14877
126	0030	0983	3263		2515	14872
126	0050	0269	3288		2624	14592
126	0075	-0026	3315		2665	14468
126	0091	-0025	3326		2674	14472

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1010	3257		2506	14876	0000	00000	2908
0010	0992	3263		2514	14872	0029	00001	2837
0020	1001	3263		2512	14877	0058	00006	2853
0030	0983	3263		2515	14872	0086	00013	2827
0050	0269	3288		2624	14592	0132	00031	1786
0075	-0026	3315		2665	14468	0173	00056	1398

C-REF-NO 001 YR 1963 DEPTH 181 WAVES 1 2155 AIR T 11.9 VIS 90  
 CONS. NO 015 MONTH 7 MXSAMPD 02 WAVES 2 2155 WET B 11.6 STN 358  
 LAT 48-00ON DAY 31 NO.DPTH 9 WND-DIR 210 WW-CODE 12  
 LON 50-00OW HR 16.4 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP' BARO 1016.5 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
164	0000	101	3230		2485	14873
164	0010	0992	3232		2490	14868
164	0020	0999	3236		2492	14873
164	0028	0795	3243		2529	14798
164	0047	0005	3295		2647	14474
164	0070	-0113	3304		2659	14425
164	0095	-0104	3317		2669	14435
164	0140	0035	3360		2698	14513
164	0165	0048	3368		2704	14524

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1010	3230		2485	14873	0000	00000	3108
0010	0992	3232		2490	14868	0031	00002	3067
0020	0999	3236		2492	14873	0062	00006	3050
0030	0707 B	3248		2545	14765	0090	00013	2542
0050	-0040 B	3298		2651	14455	0131	00029	1525
0075	-0119	3306		2661	14423	0168	00053	1431
0100	-0089	3322		2673	14444	0203	00084	1318
0125	-0012 B	3346		2689	14487	0234	00120	1164
0150	0021 B	3360		2698	14508	0262	00159	1079

C-REF-NO 001 YR 1963 DEPTH 226 WAVES 1 2155 AIR T 11.9 VIS 90  
 CONS. NO 016 MONTH 7 MXSAMPD 02 WAVES 2 2155 WET B 11.6 STN 35C  
 LAT 48-25.0N DAY 31 NO.DPTH 10 WND-DIR 210 WW-CODE 12  
 LON 50-00.0W HR 20.3 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1012.5 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
203	0000	095	3176		2453	14844
203	0010	0936	3183		2461	14841
203	0020	0917	3189		2468	14837
203	0030	0620	3201		2519	14724
203	0050	-0115	3295		2652	14419
203	0075	-0126	3312		2666	14421
203	0095	-0102	3333		2682	14438
203	0140	0075	3387		2717	14534
203	0188	0166	3420		2738	14588
203	0210	0174	3422		2739	14595

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0950	3176		2453	14844	0000	00000	3415
0010	0936	3183		2461	14841	0034	00002	3344
0020	0917	3189		2468	14837	0067	00007	3273
0030	0620	3201		2519	14724	0098	00014	2787
0050	-0115	3295		2652	14419	0141	00031	1520
0075	-0126	3312		2666	14421	0178	00054	1384
0100	-0084	3339		2687	14448	0210	00083	1188
0125	0011	3370		2707	14501	0238	00114	0997
0150	0102	3397		2723	14550	0261	00147	0846
0175	0151	3414		2734	14578	0281	00180	0746
0200	0173	3421		2738	14593	0299	00216	0709

C-REF-NO 001 YR 1963 DEPTH WAVES 1 2147 AIR T 09.9 VIS 90  
 CONS. NO 017 MONTH 8 MXSAMPD 04 WAVES 2 2145 WET B 09.7 STN 35E  
 LAT 49-000N DAY 01 NO.DPTH 12 WND-DIR 210 WW-CODE 12  
 LON 50-000W HR 01.3 W-COLOR WND-FCE 07 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1010.8 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
018	0000	066	3275		2572	14745
018	0010	0635	3279		2579	14737
018	0020	0646	3283		2580	14744
018	0030	0319	3366		2682	14621
018	0050	0293	3429		2735	14622
018	0075	0276	3449		2752	14621
018	0095	0316	3460		2757	14643
013	0125	0319	3465		2761	14650
013	0170	0343	3469		2762	14668
013	0265	0346	3479		2770	14687
013	0350	0351	3483		2772	14703
013	0430	0351	3485		2774	14717

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0660	3275		2572	14745	0000	00000	2279
0010	0635	3279		2579	14737	0023	00001	2219
0020	0646	3283		2580	14744	0045	00005	2204
0030	0319	3366		2682	14621	0062	00009	1238
0050	0293	3429		2735	14622	0082	00016	0741
0075	0276	3449		2752	14621	0099	00027	0577
0100	0319	3461		2758	14645	0113	00039	0523
0125	0319	3465		2761	14650	0126	00054	0498
0150	0332	3468		2762	14660	0138	00072	0494
0175	0344	3470		2762	14670	0150	00092	0491
0200	0347	3472		2764	14675	0163	00116	0476
*0225	0349	3475		2766	14680	0174	00142	0459
*0250	0348	3478		2768	14685	0186	00169	0441
0300	0348	3481		2771	14694	0208	00231	0420
0400	0351	3485		2774	14712	0249	00380	0403

C-REF-NO 001 YR 1963 DEPTH WAVES 1 2747 AIR T 08.6 VIS 97  
 CONS. NO 018 MONTH 8 MXSAMPD 09 WAVES 2 2145 WET B 08.3 STN 35F  
 LAT 49-300N DAY 01 NO.DPTH 16 WND-DIR 270 WW-CODE 00  
 LON 50-000W HR 06.3 W-COLOR WND-FCE 05 CLD-TPE  
 MARSID SQ 150 W-TRNSP BARO 1009.1 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
069	0000	062	3285		2585	14730
069	0010	0595	3295		2596	14723
069	0020	0515	3306		2614	14694
069	0030	0524	3366		2661	14707
069	0050	0368	3445		2740	14656
069	0075	0355	3460		2754	14657
069	0095	0342	3463		2757	14655
069	0145	0344	3472		2764	14665
069	0190	0346	3474		2766	14674
069	0240	0346	3478		2769	14682
063	0280	0353	3478		2768	14692
063	0375	0351	3481		2771	14707
063	0470	0357	3481		2770	14725
063	0565	0352	3483		2772	14739
063	0740	0346	3487		2776	14766
063	0940	0350	3488		2776	14801

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0620	3285		2585	14730	0000	00000	2155
0010	0595	3295		2596	14723	0021	00001	2052
0020	0515	3306		2614	14694	0041	00004	1881
0030	0524	3366		2661	14707	0058	00008	1442
0050	0368	3445		2740	14656	0079	00016	0689
0075	0355	3460		2754	14657	0095	00026	0566
0100	0341	3464		2758	14655	0109	00039	0524
0125	0340	3469		2762	14660	0122	00053	0490
0150	0344	3472		2764	14666	0134	00070	0469
0175	0345	3474		2765	14671	0145	00090	0463
0200	0346	3475		2766	14675	0157	00112	0455
0225	0346	3477		2768	14680	0168	00137	0442
0250	0348	3478		2769	14685	0179	00164	0437
0300	0353	3479		2768	14695	0202	00227	0444
0400	0353	3481		2771	14712	0246	00386	0433
0500	0356	3482		2771	14730	0290	00591	0442
0600	0350	3484		2773	14744	0334	00838	0426
0700	0347	3486		2775	14760	0376	01122	0414
0800	0347	3487		2776	14777	0418	01446	0415

C-REF-NO 001 YR 1963 DEPTH WAVES 1 2747 AIR T 09.7 VIS 95  
 CONS. NO 019 MONTH 8 MXSAMPD 09 WAVES 2 2145 WET B 09.1 STN 050  
 LAT 50-000N DAY 01 NO.DPTH 16 WND-DIR 270 WH-CODE 05  
 LON 50-000W HR 11.1 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1009.1 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
118	0000	077	3358		2622	14799
118	0010	0732	3358		2628	14786
118	0020	0741	3358		2627	14791
118	0030	0279	3395		2709	14608
118	0050	0428	3458		2744	14683
118	0075	0383	3467		2756	14669
118	0095	0357	3472		2763	14662
118	0145	0358	3478		2768	14672
118	0193	0358	3478		2768	14680
118	0240	0357	3479		2768	14687
111	0275	0352	3479		2769	14691
111	0365	0350	3481		2771	14705
111	0455	0356	3483		2772	14723
111	0545	0356	3483		2772	14738
111	0730	0346	3485		2774	14764
111	0920	0346	3485		2774	14796

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0770	3358		2622	14799	0000	00000	1803
0010	0732	3358		2628	14786	0018	00001	1753
0020	0741	3358		2627	14791	0036	00004	1766
0030	0279	3395		2709	14608	0049	00007	0985
0050	0428	3458		2744	14683	0066	00013	0651
0075	0383	3467		2756	14669	0081	00023	0540
0100	0355	3473		2764	14662	0094	00034	0470
0125	0352	3477		2767	14666	0105	00047	0443
0150	0358	3478		2768	14673	0116	00063	0439
0175	0358	3478		2768	14677	0127	00082	0440
0200	0358	3478		2768	14681	0139	00103	0443
0225	0358	3479		2768	14685	0150	00128	0441
0250	0356	3479		2769	14688	0161	00155	0438
0300	0350	3479		2769	14694	0183	00217	0434
0400	0352	3482		2771	14712	0226	00373	0426
0500	0357	3483		2772	14730	0270	00573	0430
0600	0353	3484		2772	14746	0313	00820	0432
0700	0346	3485		2774	14760	0357	01110	0426
0800	0348	3485		2774	14777	0400	01447	0436

C-REF-NO 001 YR 1963 DEPTH WAVES 1 2847 AIR T 09.7 VIS 97  
 CONS. NO 020 MONTH 8 MXSAMPD 05 WAVES 2 2186 WET B 09.1 STN 49B  
 LAT 49-540N DAY 01 NO.DPTH 13 WND-DIR 280 WW-CODE 00  
 LON 50-140W HR 15.3 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARD 1009.1 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
158	0000	068	3319		2604	14759
158	0010	0674	3328		2612	14759
158	0020	0648	3335		2621	14752
158	0030	0530	3373		2666	14710
158	0050	0379	3445		2739	14661
158	0075	0362	3463		2755	14660
158	0100	0338	3465		2759	14654
158	0150	0360	3476		2766	14673
153	0193	0361	3481		2770	14681
153	0240	0353	3483		2772	14686
153	0290	0357	3483		2772	14696
153	0385	0358	3487		2775	14713
153	0480	0359	3487		2775	14729

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0680	3319		2604	14759	0000	00000	1975
0010	0674	3328		2612	14759	0020	00001	1901
0020	0648	3335		2621	14752	0038	00004	1818
0030	0530	3373		2666	14710	0054	00008	1396
0050	0379	3445		2739	14661	0076	00016	0699
0075	0362	3463		2755	14660	0091	00026	0550
0100	0338	3465		2759	14654	0105	00038	0514
0125	0345	3470		2763	14662	0117	00052	0483
0150	0360	3476		2766	14673	0129	00069	0457
0175	0362	3479		2768	14679	0140	00088	0436
0200	0360	3482		2770	14682	0151	00108	0420
0225	0355	3483		2772	14684	0162	00131	0409
0250	0353	3483		2772	14688	0172	00156	0406
0300	0357	3483		2772	14698	0193	00215	0412
0400	0359	3486		2774	14716	0234	00363	0404

C-REF-NO 001 YR 1963 DEPTH 355 WAVES 1 2866 AIR T 09.7 VIS 98  
 CONS. NO 021 MONTH 8 MXSAMPD 03 WAVES 2 2194 WET B 09.1 STN 049  
 LAT 49-47ON DAY 01 NO.DPTH 12 WND-DIR 280 WW-CODE 03  
 LON 50-300W HR 18.2 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1010.8 CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
185	0000	075	3261		2549	14779
185	0010	0738	3261		2551	14776
185	0020	0716	3261		2554	14769
185	0030	-0039	3321		2670	14455
185	0050	-0044	3353		2696	14461
185	0075	0027	3382		2716	14501
185	0100	0124	3413		2735	14553
185	0150	0233	3443		2751	14614
182	0195	0288	3463		2762	14648
182	0245	0322	3465		2761	14671
182	0295	0335	3474		2767	14686
182	0348	0337	3476		2768	14696

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0750	3261		2549	14779	0000	00000	2498
0010	0738	3261		2551	14776	0025	00001	2484
0020	0716	3261		2554	14769	0050	00005	2457
0030	-0039	3321		2670	14455	0069	00010	1348
0050	-0044	3353		2696	14460	0094	00020	1101
0075	0027	3382		2716	14501	0119	00036	0913
0100	0124	3413		2735	14553	0140	00054	0735
0125	0189	3431		2745	14589	0157	00074	0644
0150	0233	3443		2751	14614	0173	00096	0591
0175	0268	3456		2758	14635	0187	00119	0527
0200	0293	3464		2762	14651	0200	00144	0491
0225	0311	3465		2762	14663	0212	00171	0498
0250	0324	3466		2761	14673	0225	00202	0506
0300	0338	3472		2765	14688	0250	00272	0477

C-REF-NO 001 YR 1963 DEPTH 331 WAVES 1 2866 AIR T 09.4 VIS 98  
 CONS. NO 022 MONTH 8 MXSAMPD 03 WAVES 2 2194 WET B 09.1 STN 48A  
 LAT 49-420N DAY 01 NO.DPTH 12 WND-DIR 270 WW-CODE 05  
 LON 50-390W HR 19.9 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1010.5 CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
203	0000	077	3263		2548	14787
199	0010	0761	3263		2549	14785
203	0020	0750	3265		2552	14783
203	0030	0567	3288		2594	14714
203	0050	-0057	3339		2685	14453
203	0075	-0005	3371		2709	14485
203	0100	0079	3398		2726	14531
203	0150	0201	3433		2746	14599
203	0200	0285	3458		2759	14647
203	0250	0318	3467		2763	14670
203	0300	0334	3474		2767	14687
199	0329	0336	3476		2768	14692

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0770	3263		2548	14787	0000	00000	2510
0010	0761	3263		2549	14785	0025	00001	2500
0020	0750	3265		2552	14783	0050	00005	2471
0030	0567	3288		2594	14714	0073	00011	2074
0050	-0057	3339		2685	14453	0106	00024	1203
0075	-0005	3371		2709	14485	0134	00041	0980
0100	0079	3398		2726	14531	0156	00061	0820
0125	0146	3418		2737	14568	0176	00083	0715
0150	0201	3433		2746	14599	0193	00107	0641
0175	0249	3447		2753	14625	0208	00133	0574
0200	0285	3458		2759	14647	0222	00159	0525
0225	0306	3464		2761	14661	0235	00188	0504
0250	0318	3467		2763	14670	0247	00218	0492
0300	0334	3474		2767	14687	0271	00286	0459

C-REF-NO 001 YR 1963 DEPTH 318 WAVES 1 2843 AIR T 09.4 VIS 98  
 CONS. NO 023 MONTH 8 MXSAMPD 03 WAVES 2 2184 WET B 09.1 STN 048  
 LAT 49-35ON DAY 01 NO.DPTH 12 WND-DIR 280 WW-CODE 02  
 LON 51-000W HR 22.6 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1012.5 CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
231	0000	079	3259		2542	14794
226	0010	0761	3259		2546	14784
231	0020	0710	3259		2553	14766
231	0030	0686	3259		2556	14758
231	0050	-0047	3328		2676	14456
231	0075	-0029	3358		2700	14472
231	0100	0068	3391		2721	14525
231	0150	0182	3423		2739	14589
231	0200	0256	3445		2751	14633
231	0250	0312	3461		2758	14667
231	0300	0344	3476		2767	14691
226	0316	0346	3476		2767	14695

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0790	3259		2542	14794	0000	00000	2567
0010	0761	3259		2546	14784	0026	00001	2529
0020	0710	3259		2553	14766	0051	00005	2464
0030	0686	3259		2556	14758	0075	00011	2435
0050	-0047	3328		2676	14456	0113	00026	1291
0075	-0029	3358		2700	14472	0143	00044	1068
0100	0068	3391		2721	14525	0167	00066	0867
0125	0134	3411		2732	14562	0188	00089	0762
0150	0182	3423		2739	14589	0206	00115	0702
0175	0223	3435		2746	14612	0223	00144	0644
0200	0256	3445		2751	14633	0239	00174	0598
0225	0287	3453		2755	14651	0253	00206	0563
0250	0312	3461		2758	14667	0267	00239	0531
0300	0344	3476		2767	14691	0292	00309	0454

C-REF-NO 001 YR 1963 DEPTH 326 WAVES 1 2822 AIR T 09.7 VIS 96  
 CONS. NO 024 MONTH 8 MXSAMPD 03 WAVES 2 2173 WET B 09.1 STN 047  
 LAT 49-22ON DAY 02 NO.DPTH 11 WND-DIR 270 WW-CODE 02  
 LON 51-300W HR 02.7 W-COLOR WND-FCE 01 CLD-TPE  
 MARSID SQ 150 W-TRNSP BARO 1014.5 CLD-AMT 2 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
030	0000	082	3256		2535	14805
027	0010	0782	3265		2548	14793
030	0020	0770	3265		2550	14790
030	0030	0359	3290		2618	14628
030	0050	-0004	3317		2665	14474
030	0075	-0050	3344		2689	14461
030	0100	-0035	3364		2705	14474
030	0150	0120	3396		2722	14558
030	0200	0220	3396		2715	14610
030	0250	0270	3433		2740	14645
027	0324	0351	3476		2767	14698

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0820	3256		2535	14805	0000	00000	2631
0010	0782	3265		2548	14793	0026	00001	2513
0020	0770	3265		2550	14790	0051	00005	2498
0030	0359	3290		2618	14628	0073	00011	1847
0050	-0004	3317		2665	14474	0106	00024	1393
0075	-0050	3344		2689	14461	0138	00044	1166
0100	-0035	3364		2705	14474	0165	00068	1019
0125	0036	3383		2716	14513	0190	00096	0912
0150	0120	3396		2722	14558	0212	00128	0862
0175	0177	3396		2718	14587	0234	00165	0905
0200	0220	3396		2715	14610	0258	00210	0937
0225	0248	3413		2726	14629	0280	00258	0836
0250	0270	3433		2740	14645	0299	00306	0703
0300	0333	3456		2753	14684	0332	00397	0592

C-REF-NO 001 YR 1963 DEPTH 302 WAVES 1 3020 AIR T 10.8 VIS 96  
 CONS. NO 025 MONTH 8 MXSAMPD 03 WAVES 2 2173 WET B 10.2 STN 046  
 LAT 49-090N DAY 02 NO.DPTH 11 WND-DIR 300 WW-CODE 02  
 LON 52-000W HR 06.5 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1016.2 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
069	0000	093	3153		2438	14834
069	0010	0899	3156		2445	14824
069	0020	0804	3241		2526	14800
069	0030	0451	3265		2589	14663
069	0050	-0109	3297		2653	14422
069	0075	-0087	3319		2670	14440
069	0100	-0066	3339		2686	14457
069	0150	0061	3382		2714	14529
069	0200	0196	3422		2737	14603
069	0250	0248	3440		2747	14637
065	0294	0282	3452		2754	14660

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0930	3153		2438	14834	0000	00000	3556
0010	0899	3156		2445	14824	0035	00002	3490
0020	0804	3241		2526	14800	0067	00006	2724
0030	0451	3265		2589	14663	0091	00012	2123
0050	-0109	3297		2653	14422	0128	00027	1506
0075	-0087	3319		2670	14440	0163	00050	1343
0100	-0066	3339		2686	14457	0195	00078	1197
0125	-0010	3360		2701	14490	0224	00111	1057
0150	0061	3382		2714	14529	0249	00146	0931
0175	0133	3404		2727	14569	0271	00182	0814
0200	0196	3422		2737	14603	0290	00220	0722
0225	0228	3433		2743	14623	0308	00258	0668
0250	0248	3440		2747	14637	0324	00298	0631

C-REF-NO 001 YR 1963 DEPTH 340 WAVES 1 3110 AIR T 12.7 VIS 98  
 CONS. NO 026 MONTH 8 MXSAMPD 03 WAVES 2 2233 WET B 12.2 STN 045  
 LAT 48-550N DAY 02 NO.DPTH 12 WND-DIR 310 WW-CODE 00  
 LON 52-340W HR 11.2 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1017.6 CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
116	0000	107	3164		2424	14886
112	0010	1034	3165		2431	14875
116	0020	-0002	3261		2620	14462
116	0030	-0083	3284		2642	14429
116	0050	-0133	3292		2650	14410
116	0075	-0134	3301		2657	14415
116	0100	-0139	3301		2657	14417
116	0150	-0122	3319		2672	14436
116	0200	-0086	3340		2687	14464
116	0250	0002	3375		2712	14518
116	0300	0121	3411		2734	14585
112	0338	0209	3436		2747	14634

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1070	3164		2424	14886	0000	00000	3693
0010	1034	3165		2431	14875	0037	00002	3630
0020	-0002	3261		2620	14462	0064	00006	1823
0030	-0083	3284		2642	14429	0082	00010	1615
0050	-0133	3292		2650	14410	0113	00023	1537
0075	-0134	3301		2657	14415	0151	00047	1466
0100	-0139	3301		2657	14417	0188	00080	1463
0125	-0134	3308		2663	14425	0224	00122	1407
0150	-0122	3319		2672	14436	0259	00170	1327
0175	-0108	3328		2679	14448	0291	00225	1258
0200	-0086	3340		2687	14464	0322	00284	1177
0225	-0047	3357		2699	14488	0350	00345	1066
0250	0002	3375		2712	14518	0376	00407	0950
0300	0121	3411		2734	14585	0419	00527	0752

C-REF-NO 001 YR 1963 DEPTH 118 WAVES 1 3110 AIR T 13.3 VIS 98  
 CONS. NO 027 MONTH 8 MXSAMPD 01 WAVES 2 2222 WET B 13.3 STN 044  
 LAT 48-460N DAY 02 NO.DPTH 8 WND-DIR 310 WW-CODE 00  
 LON 52-550W HR 13.7 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
137	0000	124	3133		2369	14942
137	0010	1092	3133		2396	14892
137	0020	0926	3133		2423	14833
137	0030	-0051	3250		2613	14440
137	0050	-0094	3281		2640	14427
137	0075	-0120	3286		2645	14420
137	0100	-0128	3299		2656	14422
137	0116	-0143	3299		2656	14418

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1240	3133		2369	14942	0000	00000	4214
0010	1092	3133		2396	14892	0041	00002	3961
0020	0926	3133		2423	14833	0080	00008	3702
0030	-0051	3250		2613	14440	0108	00015	1887
0050	-0094	3281		2640	14427	0143	00029	1633
0075	-0120	3286		2645	14420	0184	00055	1585
0100	-0128	3299		2656	14422	0222	00089	1482

C-REF-NO 001 YR 1963 DEPTH 60 WAVES 1 3110 AIR T 14.4 VIS 98  
 CONS. NO 028 MONTH 8 MXSAMPD 01 WAVES 2 2222 WET B 13.6 STN 043  
 LAT 48-425N DAY 02 NO.DPTH 5 WND-DIR CALM WW-CODE 02  
 LON 53-030W HR 15.0 W-COLOR . WND-FCE 00 CLD-TPE  
 MARSD SQ 150 W-TRNSP' BARO 1018.6 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
150	0000	135	3140		2353	14981
150	0010	1158	3146		2394	14917
150	0020	1101	3155		2411	14900
150	0030	0571	3189		2516	14703
150	0058	-0031	3270		2629	14456

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1350	3140		2353	14981	0000	00000	4365
0010	1158	3146		2394	14917	0042	00002	3976
0020	1101	3155		2411	14900	0081	00008	3815
0030	0571	3189		2516	14703	0114	00016	2821
0050	0221 H	3240		2590	14565	0164	00036	2115

C-REF-NO 001 YR 1963 DEPTH 62 WAVES 1 0000 AIR T 06.6 VIS 90  
 CONS. NO 029 MONTH 8 MXSAMPC 01 WAVES 2 0392 WET B 06.6 STN 051  
 LAT 53-140N DAY 05 NO.DPTH 5 WND-DIR CALM WW-CODE 10  
 LON 55-390W HR 01.8 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1015.9 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
018	0000	060	2835		2234	14663
018	0010	0559	2853		2252	14650
018	0020	0556	2877		2271	14654
018	0030	0468	2969		2353	14631
018	0060	-0092	3238		2605	14424

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0600	2835		2234	14663	0000	00000	5509
0010	0559	2853		2252	14650	0054	00003	5331
0020	0556	2877		2271	14654	0107	00011	5148
0030	0468	2969		2353	14631	0155	00023	4368
0050	0158	3122		2500	14521	0228	00051	2968

C-REF-NO 001 YR 1963 DEPTH 149 WAVES 1 0000 AIR T 06.3 VIS 90  
 CONS. NO 030 MONTH 8 MXSAMPO 01 WAVES 2 0392 WET B 06.1 STN 052  
 LAT 53-20'N DAY 05 NO.DPTH 8 WND-DIR 120 WW-CODE 11  
 LON 55-30'W HR 03.3 W-COLOR WND-FCE 01 CLD-TPE  
 MARSID SQ 186 W-TRNSP BARD 1015.9 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
033	0000	058	2707		2135	14638
033	0010	0549	2768		2186	14635
033	0020	0385	2963		2356	14593
033	0030	-0002	3194		2566	14454
033	0050	-0106	3245		2611	14416
033	0075	-0105	3250		2615	14422
033	0100	-0125	3263		2626	14418
033	0147	-0124	3274		2635	14428

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0580	2707		2135	14638	0000	00000	6453
0010	0549	2768		2186	14635	0062	00003	5962
0020	0385	2963		2356	14593	0114	00011	4338
0030	-0002	3194		2566	14454	0147	00019	2335
0050	-0106	3245		2611	14416	0190	00036	1906
0075	-0105	3250		2615	14422	0238	00066	1866
0100	-0125	3263		2626	14418	0283	00107	1759
0125	-0121	3267		2630	14425	0327	00157	1725
0150	-0124	3275		2636	14429	0370	00217	1664

C-REF-NO 001 YR 1963 DEPTH 286 WAVES 1 0000 AIR T 05.2 VIS 90  
 CONS. NO 031 MONTH 8 MXSAMPD 03 WAVES 2 0392 WET B 04.9 STN 053  
 LAT 53-37'N DAY 05 NO.DPTH 11 WND-DIR 120 WW-CODE 11  
 LON 55-00'W HR 06.9 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1015.9 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
073	0000	051	3165		2504	14670
073	0010	0459	3174		2516	14651
073	0020	0417	3200		2541	14639
073	0030	-0038	3272		2631	14449
073	0050	-0096	3299		2655	14429
073	0075	-0097	3317		2669	14435
073	0100	-0082	3340		2687	14449
073	0150	-0025	3377		2715	14489
073	0200	0070	3396		2725	14543
073	0250	0087	3402		2729	14560
069	0284	0167	3420		2738	14604

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	PUT.EN	SVA
0000	0510	3165		2504	14670	0000	00000	2933
0010	0459	3174		2516	14651	0029	00001	2814
0020	0417	3200		2541	14639	0056	00006	2578
0030	-0038	3272		2631	14449	0078	00011	1724
0050	-0096	3299		2655	14429	0110	00024	1495
0075	-0097	3317		2669	14435	0146	00047	1355
0100	-0082	3340		2687	14449	0178	00075	1183
0125	-0058	3360		2703	14467	0206	00107	1036
0150	-0025	3377		2715	14489	0231	00142	0923
0175	0025	3388		2721	14518	0253	00179	0862
0200	0070	3396		2725	14543	0274	00220	0836
0225	0076	3398		2726	14550	0295	00266	0817
0250	0087	3402		2729	14560	0316	00315	0796

C-REF-NO 001 YR 1963 DEPTH 169 WAVES 1 1820 AIR T 05.8 VIS 95  
 CONS. NO 032 MONTH 8 MXSAMPD 02 WAVES 2 0382 WET B 05.2 STH 53A  
 LAT 53-55N DAY 05 NO.DPTH 9 WND-DIR 180 WW-CODE 10  
 LON 54-30W HR 10.3 W-COLOR WND-FCE 01 CLD-TPE  
 MARSID SQ 186 W-TRNSP BARO 1015.9 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
105	0000	049	3131		2479	14657
105	0010	0370	3192		2539	14616
105	0020	0307	3210		2559	14593
105	0030	0146	3238		2594	14528
105	0050	-0114	3286		2645	14418
105	0075	-0104	3303		2658	14430
105	0100	-0103	3324		2675	14437
105	0150	-0021	3369		2708	14490
103	0167	0030	3387		2720	14519

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0490	3131		2479	14657	0000	00000	3168
0010	0370	3192		2539	14616	0029	00001	2595
0020	0307	3210		2559	14593	0054	00005	2405
0030	0146	3238		2594	14528	0077	00011	2077
0050	-0114	3286		2645	14418	0114	00025	1589
0075	-0104	3303		2658	14430	0152	00050	1460
0100	-0103	3324		2675	14437	0187	00081	1298
0125	-0075	3346		2691	14457	0217	00116	1143
0150	-0021	3369		2708	14490	0244	00154	0986

C-REF-NO 001 YR 1963 DEPTH 214 WAVES 1 0000 AIR T 05.2 VIS 96  
 CONS. NO 033 MONTH 8 MXSAMPD 02 WAVES 2 0382 WET B 04.9 STN 054  
 LAT 54-120N DAY 05 NO.DPTH 10 WND-DIR CALM WW-CODE 03  
 LON 54-000W HR 13.5 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1016.5 CLD-AMT B HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
138	0000	051	3165		2504	14670
138	0010	0425	3178		2523	14637
138	0020	0415	3182		2527	14635
138	0030	-0034	3286		2642	14452
138	0050	-0052	3328		2676	14453
138	0075	-0071	3346		2692	14451
138	0100	-0035	3362		2703	14474
138	0150	0087	3402		2729	14544
138	0200	0270	3451		2754	14639
135	0212	0275	3460		2761	14645

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0510	3165		2504	14670	0000	00000	2933
0010	0425	3178		2523	14637	0029	00001	2751
0020	0415	3182		2527	14635	0056	00006	2712
0030	-0034	3286		2642	14452	0078	00011	1618
0050	-0052	3328		2676	14453	0107	00023	1289
0075	-0071	3346		2692	14451	0138	00042	1143
0100	-0035	3362		2703	14474	0165	00066	1035
0125	0018	3381		2716	14505	0190	00095	0917
0150	0087	3402		2729	14544	0211	00125	0795
0175	0191 B	3427		2742	14598	0230	00156	0679
0200	0270	3451		2754	14639	0246	00186	0565

C-REF-NO 001 YR 1963 DEPTH 308 WAVES 1 0000 AIR T 05.8 VIS 98  
 CONS. NO 034 MONTH 8 MXSAMPD 03 WAVES 2 0382 WET B 05.5 STN 055  
 LAT 54-290N DAY 05 NO.DPTH 11 WND-DIR CALM WW-CODE 02  
 LON 53-300W HR 17.4 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1017.6 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
178	0000	047	3196		2532	14657
178	0010	0292	3216		2565	14586
178	0020	0317	3294		2625	14609
178	0030	0047	3315		2661	14494
178	0050	0043	3351		2690	14500
178	0075	0095	3384		2714	14532
178	0100	0240	3413		2727	14605
178	0150	0249	3438		2746	14620
178	0200	0254	3454		2758	14633
178	0250	0275	3461		2762	14651
174	0296	0312	3465		2762	14675

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0470	3196		2532	14657	0000	00000	2658
0010	0292	3216		2565	14586	0025	00001	2348
0020	0317	3294		2625	14609	0046	00004	1779
0030	0047	3315		2661	14494	0062	00008	1434
0050	0043	3351		2690	14500	0088	00019	1157
0075	0095	3384		2714	14532	0115	00035	0936
0100	0240	3413		2727	14605	0137	00055	0820
0125	0268	3429		2737	14623	0156	00077	0726
0150	0249	3438		2746	14620	0173	00102	0642
0175	0251	3447		2753	14626	0189	00127	0576
0200	0254	3454		2758	14633	0203	00154	0528
0225	0262	3458		2761	14641	0216	00182	0505
0250	0275	3461		2762	14651	0228	00213	0497
0300	0316	3465		2761	14678	0254	00285	0508

C-REF-NO C01 YR 1963 DEPTH WAVES 1 CCOO AIR T 07.2 VIS 98  
 CONS. NO 035 MONTH 8 MXSAMPC 05 WAVES 2 0382 WET B 06.9 STM 55A  
 LAT 54-370N DAY 05 NO.DPTH 13 WND-DIR CALM WW-CODE 02  
 LON 53-140W HR 20.1 W-COLOR WND-FCE 00 CLD-TPE  
 MARSID SQ 186 W-TRNSP BARO 1017.2 CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
204	0000	067	3355		2634	14760
204	0010	0622	3368		2650	14744
204	0020	0592	3373		2658	14734
204	0030	0563	3413		2693	14729
201	0050	0418	3452		2741	14678
201	0075	0297	3456		2756	14631
201	0100	0338	3460		2755	14653
201	0150	0377	3472		2761	14680
201	0200	0394	3487		2771	14697
201	0250	0395	3490		2773	14706
201	0300	0388	3492		2776	14712
201	0400	0388	3492		2776	14728
201	0500	0382	3492		2776	14742

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0670	3355		2634	14760	0000	00000	1693
0010	0622	3368		2650	14744	0016	00001	1538
0020	0592	3373		2658	14734	0031	00003	1466
0030	0563	3413		2693	14729	0044	00006	1134
0050	0418	3452		2741	14678	0063	00013	0685
0075	0297	3456		2756	14631	0078	00023	0543
0100	0338	3460		2755	14653	0092	00036	0552
0125	0362	3466		2757	14669	0106	00051	0536
0150	0377	3472		2761	14680	0119	00070	0503
0175	0388	3480		2766	14690	0131	00090	0456
0200	0394	3487		2771	14697	0142	00111	0413
0225	0396	3489		2773	14703	0152	00133	0400
0250	0395	3490		2773	14706	0162	00158	0396
0300	0388	3492		2776	14712	0182	00213	0379
0400	0388	3492		2776	14728	0221	00353	0388
0500	0382	3492		2776	14742	0260	00535	0391

C-REF-NO 001 YR 1963 DEPTH WAVES 1 1800 AIR T 07.2 VIS 96  
 CONS. NO 036 MONTH 8 MXSAMPD 05 WAVES 2 0382 WET B 06.9 STN 056  
 LAT 54-47'N DAY 05 NO.DPTH 13 WND-DIR 180 WW-CODE 02  
 LON 53-00'W HR 22.1 W-COLOR WND-FCE 01 CLD-TPE  
 MARSQ SQ 186 W-TRNSP BARO 1017.6 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
224	0000	064	3368		2648	14749
224	0010	0604	3369		2654	14737
224	0020	0555	3425		2704	14726
224	0030	0413	3451		2740	14672
221	0050	0388	3474		2761	14668
221	0075	0383	3474		2762	14670
221	0100	0393	3485		2770	14680
221	0150	0397	3487		2771	14690
221	0200	0395	3490		2773	14698
221	0250	0389	3494		2777	14704
221	0300	0375	3494		2779	14707
221	0400	0379	3494		2778	14725
221	0500	0371	3492		2777	14738

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0640	3368		2648	14749	0000	00000	1559
0010	0604	3369		2654	14737	0015	00001	1509
0020	0555	3425		2704	14726	0028	00003	1034
0030	0413	3451		2740	14672	0037	00005	0686
0050	0388	3474		2761	14668	0049	00009	0490
0075	0383	3474		2762	14670	0061	00017	0488
0100	0393	3485		2770	14680	0073	00027	0417
0125	0397	3488		2771	14686	0083	00039	0404
0150	0397	3487		2771	14690	0093	00054	0411
0175	0397	3488		2772	14694	0103	00071	0403
0200	0395	3490		2773	14698	0113	00090	0391
0225	0393	3492		2775	14702	0123	00111	0375
0250	0389	3494		2777	14704	0132	00134	0360
0300	0375	3494		2779	14707	0150	00185	0350
0400	0379	3494		2778	14725	0186	00315	0364
0500	0371	3492		2777	14738	0224	00489	0379

C-REF-NO 001 YR 1963 DEPTH WAVES 1 1311 AIR T 07.4 VIS 95  
 CONS. NO 037 MONTH 8 MXSAMPD. 10 WAVES 2 0382 WET B 07.2 STN 057  
 LAT 55-040N DAY 06 NO.DPTH 16 WND-DIR 130 WW-CODE 14  
 LON 52-300W HR 02.2 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 186 W-TRNSP BARO 1018.6 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
028	0000	072	3440		2694	14790
028	0010	0707	3443		2698	14787
028	0020	0700	3445		2701	14787
028	0030	0661	3446		2707	14773
028	0050	0497	3466		2743	14713
028	0075	0424	3481		2763	14688
028	0100	0407	3485		2768	14686
028	0150	0388	3487		2772	14686
028	0200	0379	3488		2773	14691
022	0245	0381	3488		2773	14699
022	0295	0376	3492		2777	14706
022	0395	0371	3490		2776	14720
022	0495	0377	3492		2777	14739
022	0590	0369	3492		2778	14752
022	0785	0361	3494		2780	14781
022	0980	0358	3494		2780	14812

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0720	3440		2694	14790	0000	00000	1124
0010	0707	3443		2698	14787	0011	00001	1086
0020	0700	3445		2701	14787	0022	00002	1064
0030	0661	3446		2707	14773	0032	00005	1007
0050	0497	3466		2743	14713	0049	00011	0664
0075	0424	3481		2763	14688	0064	00020	0476
0100	0407	3485		2768	14686	0075	00031	0431
0125	0396	3487		2771	14686	0086	00043	0411
0150	0388	3487		2772	14686	0096	00057	0402
0175	0382	3488		2773	14688	0106	00074	0394
0200	0379	3488		2773	14691	0116	00093	0390
0225	0380	3488		2773	14696	0126	00115	0395
0250	0381	3488		2774	14700	0136	00139	0394
0300	0376	3492		2777	14707	0155	00193	0366
0400	0371	3490		2776	14721	0193	00330	0385
0500	0377	3492		2777	14740	0232	00510	0385
0600	0368	3492		2778	14753	0271	00730	0385
0700	0363	3493		2779	14768	0309	00989	0381
0800	0360	3493		2780	14783	0348	01288	0383



PART II

(CODC Reference: CRN 05-63-002)

by

M. V. "Investigator II"



FISHERIES RESEARCH BOARD OF CANADA

Part II

St. John's to Southeast Grand Bank and Westward to St. Pierre Bank

Ship: M. V. "Investigator II"

Local cruise designation: 007

Cruise period: August 16 - August 24

Observers: Mr. G. H. Kean

Mr. M. F. Dawson

Mr. H. Lear

BIOLOGICAL STATION - St. John's Newfoundland



## **SECTION I**

**Description of data collection procedures**





Track Chart



INTRODUCTION

Forty-seven oceanographic stations were occupied in an area from St. John's to the S. E. edge of the Grand Bank and westward to St. Pierre Bank (see track chart) to obtain temperature, salinity and B. T. data.

EXTRACT OF CRUISE LOG

Departed from St. John's 1100 G. M. T. on August 16. Fair weather was encountered except for strong westerly and northwesterly winds which prevailed on August 20-23. All observations were completed on August 24. The Investigator II returned to St. John's on the same date.

OBSERVATION PROCEDURES

At each station water samples were obtained from surface to bottom (or greatest depth to 1000 metres) at standard depth intervals. Nansen type reversing water bottles were used, each bottle being equipped with two protected reversing thermometers. An unprotected thermometer was used on the lowest bottle, one on the highest and another on an intermediate bottle of each cast below 100 metres. All thermometers were read by two observers and any doubtful temperatures were checked using different thermometers. B. T. casts were made at each station and temperatures at thermometric depths to 275 metres were checked against B. T. records. Water samples for salinity analysis were drawn into Copenhagen type sample bottles. Each sample bottle was thoroughly rinsed before sample was taken.

LABORATORY PROCEDURES

Temperature and depth corrections were applied and salinity results were obtained by titration methods, using silver nitrate as a standard solution.

BATHYTHERMOGRAPH DATA

These may be obtained from the Bedford Institute of Oceanography, Dartmouth, N. S. Refer to B. T. Cruise No. INV-46.

PERSONNEL

1.	G. Kean (Technician-in-Charge)	
	F. Dawson	Sea Observers
	H. Lear	
2.	A. G. Kelland	Technicians engaged
	G. Kean	in laboratory work



## SECTION II

(SEE SECTION II OF PART I)

Description of the machine-generated data record



GENERAL INFORMATION

<u>Institute:</u>	Biological Station, St. John's, Newfoundland
<u>Observation platform:</u>	M. V. "Investigator II"
<u>Vessel's cruising speed:</u>	9 knots
<u>Total number of stations occupied:</u>	47
<u>Barometer readings</u>	obtained using an Aneroid Barometer and are not corrected
<u>Air temperature</u>	observed from a sling psychrometer
<u>Wet Bulb temperature</u>	observed from a sling psychrometer
<u>Surface sea water temperature</u>	obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.09
Salinity	0.08



### **SECTION III**

**Serial oceanographic data**



C-REF-NO 002 YR 1963 DEPTH 176 WAVES 1 2753 AIR T 17.4 VIS 98  
 CONS. NO 001 MONTH 8 MXSAMPD 02 WAVES 2 2188 WET B 15.8 STN 027  
 LAT 47-328N DAY 16 NO.DPTH 9 WND-DIR 270 WW-CODE 02  
 LON 52-352W HR 11.8 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1015.9 CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
118	0000	122	3180		2409	14941
118	0010	1196	3182		2415	14935
118	0020	1040	3191		2450	14882
118	0030	0989	3248		2503	14872
118	0050	0160	3262		2612	14541
118	0075	-0084	3283		2641	14436
118	0100	-0127	3288		2647	14421
118	0150	-0119	3294		2651	14434
118	0174	-0112	3310		2664	14443

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-U	POT. EN	SVA
0000	1220	3180		2409	14941	0000	00000	3831
0010	1196	3182		2415	14935	0038	00002	3776
0020	1040	3191		2450	14882	0075	00007	3449
0030	0989	3248		2503	14872	0107	00016	2947
0050	0160	3262		2612	14541	0155	00034	1904
0075	-0084	3283		2641	14436	0200	00062	1620
0100	-0127	3288		2647	14421	0240	00098	1566
0125	-0131	3289		2648	14423	0279	00144	1555
0150	-0119	3294		2651	14434	0318	00198	1520
0175	-0111	3311		2664	14444	0355	00259	1394

C-REF-NO 002 YR 1963 DEPTH 137 WAVES 1 2754 AIR T 14.1 VIS 90  
 CONS. NO 002 MONTH 8 MXSAMPD 01 WAVES 2 2187 WET B 13.8 STN 028  
 LAT 47-0CON DAY 16 NO.DPTH 8 WND-DIR 240 WW-CODE 45  
 LON 52-020W HR 17.3 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
173	0000	127	3201		2416	14961
173	0010	1266	3214		2427	14963
173	0020	1250	3205		2423	14958
173	0030	0809	3232		2518	14803
173	0050	-0044	3294		2649	14452
173	0075	-0123	3303		2659	14421
173	0100	-0115	3321		2673	14431
173	0134	-0062	3340		2686	14464

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1270	3201		2416	14961	0000	00000	3767
0010	1266	3214		2427	14963	0037	00002	3666
0020	1250	3205		2423	14958	0074	00008	3706
0030	0809	3232		2518	14803	0107	00016	2799
0050	-0044	3294		2649	14452	0151	00032	1552
0075	-0123	3303		2659	14421	0189	00056	1454
0100	-0115	3321		2673	14431	0224	00088	1317
0125	-0089	3334		2683	14449	0256	00124	1226

C-REF-NO 002 YR 1963 DEPTH 89 WAVES 1 2133 AIR T 14.7 VIS 96  
 CONS. NO 003 MONTH 8 MXSAMPD 01 WAVES 2 2155 WET B 14.4 STN 029  
 LAT 46-250N DAY 16 NO.DPTH 7 WND-DIR 210 WW-CODE 00  
 LON 51-280W HR 22.7 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.9 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
227	0000	134	3227		2422	14988
227	0010	1339	3227		2423	14989
227	0020	1297	3227		2431	14977
227	0030	0908	3250		2517	14843
227	0050	0216	3288		2629	14569
227	0075	0008	3313		2662	14483
227	0087	0011	3313		2661	14486

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1340	3227		2422	14988	0000	00000	3707
0010	1339	3227		2423	14989	0037	00002	3707
0020	1297	3227		2431	14977	0074	00008	3630
0030	0908	3250		2517	14843	0106	00016	2808
0050	0216	3288		2629	14569	0152	00033	1745
0075	0008	3313		2662	14483	0192	00058	1429

C-REF-NO 002 YR 1963 DEPTH 78 WAVES 1 2133 AIR T 15.5 VIS 96  
 CONS. NO 004 MONTH 8 MXSAMPC 01 WAVES 2 2155 WET B 15.2 STN 030  
 LAT 45-440N DAY 17 NO.DPTH 6 WND-DIR 210 WW-CODE 00  
 LON 50-480W HR 04.4 W-COLOR WND-FCE 03 CLD-TPE  
 MARSID SQ 150 W-TRNSP BARO 1020.6 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
044	0000	138	3238		2423	15003
044	0010	1390	3238		2421	15008
044	0020	1335	3238		2432	14991
044	0030	0813	3261		2540	14808
044	0050	0086	3303		2649	14513
044	0076	-0003	3330		2676	14480

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1380	3238		2423	15003	0000	000C0	3703
0010	1390	3238		2421	15008	0037	00002	3725
0020	1335	3238		2432	14991	0074	00008	3621
0030	0813	3261		2540	14808	0105	00015	2589
0050	0086	3303		2649	14513	0147	00031	1547
0075	-0015	3329		2676	14475	0183	00054	1294

C-REF-NO 002 YR 1963 DEPTH 62 WAVES 1 2721 AIR T 18.0 VIS 97  
 CONS. NO 005 MONTH 8 MXSAMPD 01 WAVES 2 2105 WET B 16.9 STN 031  
 LAT 45-04N DAY 17 NO.DPTH 6 WND-DIR 270 WW-CODE 01  
 LON 50-100W HR 10.4 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1020.9 CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
104	0000	152	3229		2386	15047
104	0010	1516	3229		2387	15047
104	0020	1465	3229		2398	15033
104	0030	0629	3250		2557	14734
104	0050	0215	3279		2621	14567
104	0060	0190	3283		2627	14558

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1520	3229		2386	15047	0000	00000	4049
0010	1516	3229		2387	15047	0041	00002	4044
0020	1465	3229		2398	15033	0081	00008	3942
0030	0629	3250		2557	14734	0113	00016	2432
0050	0215	3279		2621	14567	0156	00033	1813

C-REF-NO 002 YR 1963 DEPTH 50 WAVES 1 2721 AIR T 18.0 VIS 97  
 CONS. NO 006 MONTH 8 MXSAMPD 00 WAVES 2 2105 WET B 17.2 STN 032  
 LAT 44-198N DAY 17 NO.DPTH 5 WND-DIR 270 WW-CODE 02  
 LON 49-292W HR 15.9 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1026.0 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
159	0000	161	3218		2358	15074
159	0010	1590	3221		2365	15070
159	0020	1121	3250		2482	14919
159	0030	0226	3297		2635	14571
159	0049	0180	3297		2638	14554

\*TIME-DISTANCE CHECK FAILED

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1610	3218		2358	15074	0000	00000	4319
0010	1590	3221		2365	15070	0043	00002	4257
0020	1121	3250		2482	14919	0080	00008	3147
0030	0226	3297		2635	14571	0105	00013	1684
0050	0185 B	3296		2638	14556	0138	00027	1660

C-REF-NO C02 YR 1963 DEPTH 285 WAVES 1 2721 AIR T 17.7 VIS 97  
 CONS. NO 007 MONTH 8 MXSAMPD 03 WAVES 2 2105 WET B 16.3 STN 033  
 LAT 43-54N DAY 17 NO.DPTH 11 WND-DIR 270 WW-CODE 01  
 LON 49-06W HR 20.7 W-COLOR WND-FCE 01 CLD-TPE  
 MARSID SQ 149 W-TRNSP BARO 1026.7 CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
210	0000	139	3216		2404	15003
210	0010	1198	3221		2445	14941
210	0020	0883	3239		2513	14830
210	0030	-0046	3283		2640	14446
210	0050	-0124	3304		2659	14416
210	0075	-0044	3338		2684	14463
207	0100	-0008	3349		2691	14485
207	0150	0018	3366		2704	14507
207	0190	0033	3371		2707	14521
207	0240	0158	3416		2735	14592
207	0265	0229	3440		2749	14631

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1390	3216		2404	15003	0000	00000	3884
0010	1198	3221		2445	14941	0037	00002	3492
0020	0883	3239		2513	14830	0069	00007	2851
0030	-0046	3283		2640	14446	0092	00012	1636
0050	-0124	3304		2659	14416	0123	00025	1448
0075	-0044	3338		2684	14463	0156	00046	1215
0100	-0008	3349		2691	14485	0186	00072	1146
0125	0009	3359		2698	14498	0214	00105	1080
0150	0018	3366		2704	14507	0241	00142	1029
0175	0023	3368		2705	14514	0266	00185	1016
0200	0052	3378		2712	14533	0291	00233	0955
0225	0113	3400		2726	14567	0314	00282	0828
0250	0179	3423		2739	14604	0333	00329	0706

C-REF-NO 002 YR 1963 DEPTH 896 WAVES 1 0001 AIR T 14.9 VIS 97  
 CONS. NO 008 MONTH 8 MXSAMPD 05 WAVES 2 2195 WET B 14.4 STN 33A  
 LAT 43-520N DAY 17 NO.DPTH 13 WND-DIR CALM WW-CODE 03  
 LON 48-550W HR 22.5 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1026.0 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
228	0000	136	3191	2391	14990	
228	0010	1271	3194	2410	14962	
228	0020	1204	3196	2425	14941	
228	0030	0863	3250	2524	14826	
228	0050	0136	3304	2647	14536	
228	0075	-0083	3333	2682	14444	
228	0100	-0024	3362	2703	14479	
225	0150	0154	3416	2736	14575	
225	0195	0209	3436	2747	14610	
225	0243	0279	3461	2761	14652	
225	0290	0332	3470	2764	14683	
225	0390	0366	3485	2772	14716	
225	0490	0370	3496	2781	14736	

#WAVES NOT COMPATIBLE WITH WIND

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1360	3191	2391	14990	0000	00000	4009	
0010	1271	3194	2410	14962	0039	00002	3823	
0020	1204	3196	2425	14941	0077	00008	3689	
0030	0863	3250	2524	14826	0109	00016	2742	
0050	0136	3304	2647	14536	0153	00032	1569	
0075	-0083	3333	2682	14444	0188	00054	1238	
0100	-0024	3362	2703	14479	0217	00080	1039	
0125	0068	3391	2721	14529	0241	00107	0863	
0150	0154	3416	2736	14575	0261	00136	0734	
0175	0190	3429	2743	14597	0279	00165	0667	
0200	0216	3439	2749	14614	0295	00196	0611	
0225	0253	3452	2757	14636	0309	00227	0541	
0250	0288	3463	2762	14657	0322	00259	0495	
0300	0338	3472	2764	14688	0347	00329	0480	
0400	0379	3487	2772	14724	0392	00491	0420	
0500	0366	3497	2782	14736	0431	00666	0338	

C-REF-NO 002 YR 1963 DEPTH 1426 WAVES 1 0001 AIR T 15.8 VIS 91  
 CONS. NO 009 MONTH 8 MXSAMPD 05 WAVES 2 2195 WET B 15.5 STN 33B  
 LAT 43-49N DAY 18 NO.DPTH 13 WND-DIR 210 WW-CODE 00  
 LON 48-43W HR 00.4 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1028.1 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
007	0000	156	3218		2369	15058
007	0010	1478	3223		2391	15035
007	0020	1396	3232		2415	15011
007	0030	0939	3326		2572	14864
007	0050	0563	3396		2680	14730
007	0075	0387	3425		2723	14665
007	0100	0313	3436		2738	14639
004	0150	0318	3461		2758	14653
004	0200	0338	3472		2765	14671
004	0250	0392	3488		2772	14705
004	0295	0436	3494		2772	14731
004	0395	0424	3494		2773	14743
004	0490	0418	3494		2774	14756

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1560	3218		2369	15058	0000	00000	4213
0010	1478	3223		2391	15035	0041	00002	4010
0020	1396	3232		2415	15011	0080	00008	3783
0030	0939	3326		2572	14864	0111	00015	2291
0050	0563	3396		2680	14730	0147	00029	1264
0075	0387	3425		2723	14665	0174	00046	0860
0100	0313	3436		2738	14639	0193	00063	0709
0125	0302	3449		2750	14641	0210	00082	0602
0150	0318	3461		2758	14653	0224	00102	0529
0175	0325	3467		2762	14661	0237	00123	0492
0200	0338	3472		2765	14671	0249	00147	0470
0225	0363	3480		2769	14687	0261	00172	0434
0250	0392	3488		2772	14705	0271	00198	0408
0300	0437	3494		2772	14733	0292	00256	0415
0400	0446 B	3497		2773	14753	0334	00408	0418

C-REF-NO 002 YR 1963 DEPTH 1291 WAVES 1 0001 AIR T 16.3 VIS 91  
 CONS. NO 010 MONTH 8 MXSAMPD 05 WAVES 2 2195 WET B 15.8 STN 33D  
 LAT 43-47ON DAY 18 NO.DPTH 13 WND-DIR 210 WW-CODE 02  
 LON 48-310W HR 02.3 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1028.7 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
025	0000	164	3247		2374	15087
025	0010	1659	3247		2369	15094
025	0020	1581	3266		2401	15074
025	0030	1050	3369		2586	14910
025	0050	0704	3438		2695	14792
025	0075	0670	3461		2717	14786
025	0100	0650	3463		2722	14782
023	0148	0314	3434		2737	14647
023	0197	0245	3443		2750	14627
023	0246	0484	3487		2761	14742
023	0294	0491	3492		2764	14754
023	0392	0485	3499		2771	14768
023	0490	0426	3488		2768	14759

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1640	3247		2374	15087	0000	00000	4172
0010	1659	3247		2369	15094	0042	00002	4216
0020	1581	3266		2401	15074	0083	00008	3912
0030	1050	3369		2586	14910	0113	00016	2151
0050	0704	3438		2695	14792	0146	00028	1126
0075	0670	3461		2717	14786	0172	00044	0914
0100	0650	3463		2722	14782	0195	00065	0877
0125	0483 C	3448		2731	14717	0216	00089	0790
0150	0305	3434		2737	14644	0235	00115	0724
0175	0240	3434		2744	14620	0252	00145	0663
0200	0259	3446		2751	14634	0268	00175	0594
0225	0377 C	3468		2758	14692	0282	00206	0537
0250	0489	3488		2762	14745	0296	00238	0513
0300	0492	3493		2765	14755	0321	00310	0488
0400	0478	3497		2770	14767	0369	00480	0455

C-REF-NO 002 YR 1963 DEPTH 3182 WAVES 1 0000 AIR T 16.6 VIS 90  
 CONS. NO 011 MONTH 8 MXSAMPD 10 WAVES 2 2185 WET B 16.1 STN 33F  
 LAT 43-430N DAY 18 NO.DPTH 16 WND-DIR CALM WW-CODE 02  
 LON 48-120W HR 04.3 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1027.7 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
050	0000	176	3315		2397	15131
050	0010	1723	3315		2406	15122
050	0020	1574	3325		2448	15079
050	0030	1233	3334		2526	14970
050	0050	0354	3348		2665	14637
050	0075	0589	3434		2707	14750
050	0100	0658	3454		2713	14784
047	0140	0455				
047	0190	0468	3459		2741	14723
047	0240	0469	3469		2749	14733
047	0290	0517	3490		2760	14764
047	0390	0475	3494		2768	14763
043	0485	0473	3499		2772	14779
043	0585	0443	3499		2775	14783
043	0785	0408	3499		2779	14801
043	0985	0387	3497		2780	14826

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1760	3315		2397	15131	0000	00000	3944
0010	1723	3315		2406	15122	0039	00002	3863
0020	1574	3325		2448	15079	0076	00008	3466
0030	1233	3334		2526	14970	0107	00015	2728
0050	0354	3348		2665	14637	0149	00031	1406
0075	0589	3434		2707	14750	0179	00050	1013
0100	0658	3454		2713	14784	0204	00072	0954
0125	0543 C	3460		2733	14743	0226	00097	0772
0150	0446	3462		2746	14708	0244	00122	0648
0175	0449	3461		2745	14713	0260	00150	0662
0200	0467	3460		2742	14724	0277	00182	0690
0225	0467	3465		2746	14729	0294	00219	0657
0250	0479	3473		2751	14739	0310	00258	0612
0300	0516	3492		2761	14765	0339	00339	0526
0400	0475	3495		2768	14765	0389	00518	0466
0500	0469	3499		2773	14780	0435	00728	0437
0600	0440	3499		2776	14784	0478	00971	0414
0700	0420	3499		2778	14792	0519	01246	0401
0800	0403	3499		2779	14802	0559	01556	0394
1000	0387	3497		2780	14828	0640	02309	0407

C-REF-NO 002 YR 1963 DEPTH 51 WAVES 1 1611 AIR T 17.7 VIS 97  
 CONS. NO 012 MONTH 8 MXSAMPD 00 WAVES 2 2185 WET B 16.3 STN 32A  
 LAT 44-000N DAY 18 NO.DPTH 5 WND-DIR 160 WW-CODE 01  
 LON 50-000W HR 14.7 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1027.4 CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
147	0000	170	3210		2331	15101
147	0010	1632	3210		2347	15081
147	0020	1326	3214		2415	14985
147	0030	0525	3247		2567	14692
147	0050	0468	3250		2575	14672

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1700	3210		2331	15101	0000	00000	4574
0010	1632	3210		2347	15081	0045	00002	4428
0020	1326	3214		2415	14985	0086	00008	3780
0030	0525	3247		2567	14692	0117	00016	2335
0050	0468	3250		2575	14672	0163	00035	2254

C-REF-NO 002 YR 1963 DEPTH 67 WAVES 1 0922 AIR T 17.2 VIS 95  
 CONS. NO 013 MONTH 8 MXSAMPD 01 WAVES 2 2165 WET B 16.6 STN 026  
 LAT 43-275N DAY 18 NO.DPTH 6 WND-DIR 090 WW-CODE 03  
 LON 50-308W HR 19.2 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
192	0000	181	3203		2300	15132
192	0010	1813	3203		2299	15135
192	0020	1738	3203		2317	15114
192	0030	0815	3234		2519	14805
192	0050	0393	3250		2583	14640
192	0066	0265	3283		2621	14592

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1810	3203		2300	15132	0000	00000	4875
0010	1813	3203		2299	15135	0049	00003	4885
0020	1738	3203		2317	15114	0097	00010	4716
0030	0815	3234		2519	14805	0135	00019	2792
0050	0393	3250		2583	14640	0185	00039	2181

C-REF-NO 002 YR 1963 DEPTH 66 WAVES 1 0933 AIR T 17.4 VIS 95  
 CONS. NO 014 MONTH 8 MXSAMPD 01 WAVES 2 2163 WET B 16.9 STN 26A  
 LAT 43-100N DAY 18 NO.DPTH 6 WND-DIR 090 WW-CODE 01  
 LON 50-000W HR 22.8 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1024.3 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
228	0000	172	3216		2331	15107
228	0010	1731	3216		2329	15112
228	0020	1530	3225		2381	15053
228	0030	0615	3268		2573	14731
228	0050	0105	3301		2647	14521
228	0065	0085	3301		2648	14515

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1720	3216		2331	15107	0000	00000	4575
0010	1731	3216		2329	15112	0046	00002	4603
0020	1530	3225		2381	15053	0090	00009	4105
0030	0615	3268		2573	14731	0122	00017	2280
0050	0105	3301		2647	14521	0161	00032	1573

C-REF-NO 002 YR 1963 DEPTH 239 WAVES 1 0933 AIR T 15.8 VIS 92  
 CONS. NO 015 MONTH 8 MXSAMPC 02 WAVES 2 2162 WET B 15.2 STN 26B  
 LAT 43-010N DAY 19 NO.DPTH 10 WND-DIR 090 WW-CODE 00  
 LON 49-460W HR 01.5 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1024.3 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
015	0000	147	3225		2394	15031
015	0010	1401	3225		2408	15010
015	0020	0592	3265		2573	14720
015	0030	0078	3292		2641	14505
015	0050	-0071	3297		2652	14440
015	0075	-0109	3301		2657	14427
015	0100	-0108	3308		2662	14433
015	0145	-0094	3317		2669	14448
015	0191	-0031	3344		2688	14489
015	0224	0072	3382		2714	14546

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1470	3225		2394	15031	0000	00000	3976
0010	1401	3225		2408	15010	0039	00002	3842
0020	0592	3265		2573	14720	0070	00006	2274
0030	0078	3292		2641	14505	0090	00011	1626
0050	-0071	3297		2652	14440	0121	00024	1519
0075	-0109	3301		2657	14427	0159	00048	1474
0100	-0108	3308		2662	14433	0195	00081	1419
0125	-0104	3312		2666	14439	0231	00122	1387
0150	-0091	3319		2670	14451	0265	00170	1340
0175	-0061	3332		2680	14470	0298	00224	1250
0200	-0002	3354		2695	14505	0327	00281	1106
0225	0076	3383		2714	14548	0353	00337	0930

C-REF-NO 002 YR 1963 DEPTH 768 WAVES 1 0933 AIR T 15.5 VIS 92  
 CONS. NO 016 MONTH 8 MXSAMPD 05 WAVES 2 2162 WET B 15.2 STN 26D  
 LAT 42-520N DAY 19 NO.DPTH 13 WND-DIR 090 WW-CODE 45  
 LON 49-320W HR 03.9 W-COLOR WND-FCE 02 CLD-TPE  
 MARSID SQ 149 W-TRNSP BARO 1025.4 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
043	0000	137	3216		2408	14997
043	0010	1342	3220		2417	14990
043	0020	1120	3227		2464	14916
043	0030	0749	3290		2572	14787
043	0050	0292	3294		2627	14603
043	0075	-0046	3348		2692	14463
043	0098	0232	3404		2720	14600
039	0135	0422	3454		2742	14694
039	0185	0413	3470		2756	14700
039	0235	0347	3472		2764	14681
039	0273	0354	3478		2768	14691
039	0365	0369	3479		2767	14713
039	0454	0371	3481		2769	14729

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1370	3216		2408	14997	0000	00000	3845
0010	1342	3220		2417	14990	0038	00002	3764
0020	1120	3227		2464	14916	0074	00007	3315
0030	0749	3290		2572	14787	0102	00014	2285
0050	0292	3294		2627	14603	0143	00030	1759
0075	-0046	3348		2692	14463	0179	00053	1138
0100	0248	3408		2722	14608	0204	00075	0867
0125	0395	3445		2737	14679	0224	00098	0725
0150	0438	3463		2747	14704	0242	00122	0637
0175	0429	3470		2754	14706	0257	00147	0577
0200	0392	3471		2759	14694	0271	00174	0531
0225	0359	3472		2763	14685	0284	00202	0493
0250	0347	3474		2766	14684	0296	00232	0465
0300	0359	3479		2768	14698	0319	00297	0445
0400	0370	3482		2770	14719	0364	00458	0442

C-REF-NO 002 YR 1963 DEPTH WAVES 1 0921 AIR T 15.8 VIS 90  
 CONS. NO 017 MONTH 8 MXSAMPD 09 WAVES 2 2153 WET B 15.5 STN 26F  
 LAT 42-440N DAY 19 NO.DPTH 16 WND-DIR 090 WW-CODE 45  
 LON 49-150W HR 06.5 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1020.6 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
073	0000	144	3212		2390	15019
073	0010	1165	3221		2451	14929
073	0020	0948	3239		2502	14855
073	0030	0610	3297		2596	14733
073	0050	-0057	3336		2683	14452
073	0075	0104	3373		2704	14535
073	0095	0201	3404		2722	14586
068	0145	0351	3438		2736	14663
068	0193	0453	3469		2750	14718
068	0241	0545	3488		2755	14767
068	0290	0514	3488		2759	14762
068	0380	0471	3490		2765	14759
065	0470	0490	3494		2766	14783
065	0565	0454	3494		2770	14783
065	0760	0407	3494		2775	14796
065	0940	0383	3496		2779	14816

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1440	3212		2390	15019	0000	00000	4011
0010	1165	3221		2451	14929	0037	00002	3434
0020	0948	3239		2502	14855	0069	00007	2948
0030	0610	3297		2596	14733	0095	00013	2057
0050	-0057	3336		2683	14452	0128	00025	1226
0075	0104	3373		2704	14535	0156	00043	1025
0100	0220	3409		2725	14595	0180	00064	0836
0125	0302	3428		2733	14638	0200	00087	0759
0150	0363	3442		2738	14670	0218	00113	0718
0175	0418	3458		2746	14699	0236	00142	0651
0200	0470	3473		2751	14727	0251	00173	0602
0225	0522	3483		2754	14754	0266	00205	0584
0250	0544	3489		2755	14768	0281	00241	0574
0300	0507	3488		2759	14761	0309	00320	0541
0400	0475	3491		2765	14764	0361	00507	0493
0500	0481	3494		2767	14784	0411	00736	0488
0600	0443	3494		2771	14785	0459	01005	0457
0700	0418	3494		2774	14791	0504	01307	0438
0800	0398	3495		2777	14799	0547	01641	0418

C-REF-NO 002 YR 1963 DEPTH 1737 WAVES 1 2011 AIR T 18.3 VIS 95  
 CONS. NO 018 MONTH 8 MXSAMPD 10 WAVES 2 2154 WET B 18.0 STN 26G  
 LAT 42-350N DAY 19 NO.DPTH 16 WND-DIR 200 WW-CODE 03  
 LON 48-570W HR 09.8 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 149 W-TRNSP BARO 1019.3 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
104	0000	179	3261		2349	15134
104	0010	1781	3261		2351	15133
104	0020	0980	3304		2548	14875
104	0030	0468	3340		2647	14680
104	0050	0960	3489		2695	14896
104	0075	0721	3459		2709	14806
104	0095	0559	3443		2718	14742
101	0150	0597	3465		2730	14770
101	0197	0615	3481		2740	14787
101	0244	0570	3481		2746	14776
101	0293	0509	3483		2755	14760
101	0390	0499	3490		2762	14773
098	0490	0471	3496		2770	14778
098	0585	0452	3496		2772	14786
098	0780	0392	3496		2778	14794
098	0975	0376	3496		2780	14819

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1790	3261		2349	15134	0000	00000	4406
0010	1781	3261		2351	15133	0044	00002	4388
0020	0980	3304		2548	14875	0079	00007	2516
0030	0468	3340		2647	14680	0099	00012	1576
0050	0960	3489		2695	14896	0127	00023	1122
0075	0721	3459		2709	14806	0153	00040	0996
0100	0548 B	3443		2719	14739	0177	00061	0900
0125	0537 C	3449		2725	14739	0199	00086	0844
0150	0597	3465		2730	14770	0220	00116	0802
0175	0611	3475		2736	14781	0240	00148	0751
0200	0613	3481		2741	14787	0258	00184	0709
0225	0593	3482		2744	14782	0275	00222	0682
0250	0562	3481		2747	14774	0292	00263	0652
0300	0506	3484		2756	14760	0323	00350	0574
0400	0496	3491		2763	14773	0379	00547	0520
0500	0469	3496		2770	14779	0428	00774	0459
0600	0447	3496		2773	14787	0474	01033	0445
0700	0416	3496		2776	14790	0517	01324	0419
0800	0399	3496		2778	14800	0559	01647	0409

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2155 AIR T 16.6 VIS 91  
 CONS. NO 019 MONTH 8 MXSAMPD 03 WAVES 2 2155 WET B 16.6 STN 019  
 LAT 42-565N DAY 19 NO.DPTH 11 WND-DIR 210 WW-CODE 02  
 LON 50-168W HR 17.5 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1015.9 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
177	0000	126	3223		2435	14961
177	0010	1224	3227		2445	14950
177	0020	0824	3243		2525	14808
177	0030	0118	3281		2630	14521
177	0050	-0122	3297		2654	14416
177	0075	-0095	3315		2667	14436
175	0100	-0075	3335		2683	14452
175	0145	0042	3375		2710	14519
175	0190	0106	3396		2723	14558
175	0240	0177	3420		2737	14601
175	0265	0193	3423		2738	14613

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1260	3223		2435	14961	0000	00000	3587
0010	1224	3227		2445	14950	0036	00002	3494
0020	0824	3243		2525	14808	0067	00006	2737
0030	0118	3281		2630	14521	0089	00012	1733
0050	-0122	3297		2654	14416	0122	00025	1502
0075	-0095	3315		2667	14436	0158	00048	1371
0100	-0075	3335		2683	14452	0191	00077	1224
0125	-0013	3358		2699	14488	0220	00110	1074
0150	0050	3378		2712	14524	0245	00146	0957
0175	0088	3390		2719	14546	0269	00185	0887
0200	0122	3402		2726	14568	0290	00226	0821
0225	0158	3414		2734	14590	0310	00270	0754
0250	0181	3420		2737	14604	0329	00315	0727

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2753 AIR T 17.4 VIS 92  
 CONS. NO 020 MONTH 8 MXSAMPD 03 WAVES 2 2166 WET B 17.2 STN 018  
 LAT 43-08N DAY 19 NO.DPTH 11 WND-DIR 270 WW-CODE 00  
 LON 51-100W HR 22.8 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1015.9 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
232	0000	155	3229		2380	15057
232	0010	1548	3229		2380	15058
232	0020	0658	3272		2570	14747
232	0030	0175	3286		2630	14547
232	0050	-0110	3303		2658	14423
232	0075	-0096	3317		2669	14435
232	0095	-0063	3321		2671	14455
228	0145	-0013	3353		2695	14490
228	0193	0037	3369		2705	14523
228	0240	0153	3404		2726	14588
228	0265	0185	3411		2729	14607

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1550	3229		2380	15057	0000	00000	4112
0010	1548	3229		2380	15058	0041	00002	4110
0020	0658	3272		2570	14747	0074	00007	2301
0030	0175	3286		2630	14547	0094	00012	1731
0050	-0110	3303		2658	14423	0126	00025	1460
0075	-0096	3317		2669	14435	0161	00047	1356
0100	-0057	3324		2673	14459	0195	00077	1317
0125	-0030	3339		2685	14477	0227	00114	1209
0150	-0009	3355		2696	14493	0256	00155	1102
0175	0014	3363		2701	14509	0283	00200	1051
0200	0054	3375		2709	14533	0309	00249	0984
0225	0116	3393		2720	14568	0332	00300	0881
0250	0157	3404		2726	14591	0354	00353	0831

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2776 AIR T 17.4 VIS 93  
 CONS. NO 021 MONTH 8 MXSAMPD 02 WAVES 2 2776 WET B 15.8 STN 017  
 LAT 43-360N DAY 20 NO.DPTH 11 WND-DIR 270 WW-CODE 00  
 LON 51-560W HR 04.9 W-COLOR WND-FCE 07 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
053	0000	178	3268		2357	15131
053	0010	1784	3268		2356	15134
053	0020	1711	3268		2373	15114
053	0030	0635	3286		2584	14741
053	0045	0179	3306		2646	14554
053	0065	-0008	3324		2671	14476
049	0090	0029	3326		2671	14497
049	0135	0003	3349		2691	14496
049	0165	0652	3449		2710	14792
049	0225	0217	3409		2725	14615
049	0250	0272	3422		2731	14645

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1780	3268		2357	15131	0000	00000	4332
0010	1784	3268		2356	15134	0044	00002	4344
0020	1711	3268		2373	15114	0086	00009	4181
0030	0635	3286		2584	14741	0118	00016	2170
0050	0101	3312		2655	14521	0155	00031	1489
0075	-0009 B	3326		2673	14477	0191	00053	1324
0100	-0023 D	3323		2671	14474	0224	00083	1334
0125	-0038 D	3336		2682	14473	0256	00120	1229
0150	0330 E	3400		2708	14650	0284	00160	1001
0175	0632 H	3450 B		2714	14786	0309	00201	0962
0200	0490 I	3439 B		2723	14731	0332	00245	0876
0225	0217	3409		2725	14615	0354	00292	0838
0250	0272	3422		2731	14645	0374	00342	0788

C-REF-NO 002 YR 1963 DEPTH 71 WAVES 1 2976 AIR T 17.7 VIS 96  
 CONS. NO 022 MONTH 8 MXSAMPD 01 WAVES 2 2776 WET B 15.8 STN 025  
 LAT 43-515N DAY 20 NO.DPTH 6 WND-DIR 290 WW-CODE 02  
 LON 51-100W HR 09.6 W-COLOR WND-FCE 05 CLD-TPE  
 MARSQ 150 W-TRNSP BARO 1017.9 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
096	0000	172	3212		2328	15107
096	0010	1716	3214		2331	15108
096	0020	1416	3221		2402	15016
096	0030	0686	3236		2538	14755
096	0050	0381	3265		2596	14637
096	0070	0205	3288		2629	14567

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1720	3212		2328	15107	0000	00000	4604
0010	1716	3214		2331	15108	0046	00002	4583
0020	1416	3221		2402	15016	0089	00009	3903
0030	0686	3236		2538	14755	0121	00017	2606
0050	0381	3265		2596	14637	0168	00035	2056

C-REF-NO 002 YR 1963 DEPTH 78 WAVES 1 3187 AIR T 17.4 VIS 96  
 CONS. NO 023 MONTH 8 MXSAMPD 01 WAVES 2 2977 WET B 16.6 STN 024  
 LAT 44-100N DAY 20 NO.DPTH 6 WND-DIR 310 WW-CODE 01  
 LON 51-410W HR 13.5 W-COLOR WND-FCE 08 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
135	0000	174	3209		2321	15113
135	0010	1732	3209		2323	15112
135	0020	1694	3209		2332	15102
135	0030	0914	3229		2500	14842
135	0050	0333	3292		2622	14620
135	0075	0104	3319		2661	14527

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1740	3209		2321	15113	0000	00000	4671
0010	1732	3209		2323	15112	0047	00002	4656
0020	1694	3209		2332	15102	0093	00009	4574
0030	0914	3229		2500	14842	0131	00019	2973
0050	0333	3292		2622	14620	0179	00037	1810
0075	0104	3319		2661	14527	0220	00063	1435

C-REF-NO 002 YR 1963 DEPTH 80 WAVES 1 3176 AIR T 16.6 VIS 96  
 CONS. NO 024 MONTH 8 MXSAMPD 01 WAVES 2 2977 WET B 15.8 STN 023  
 LAT 44-245N DAY 20 NO.DPTH 6 WND-DIR 310 WW-CODE 02  
 LON 52-050W HR 17.2 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1022.0 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
172	0000	173	3214		2327	15110
172	0010	1737	3214		2326	15114
172	0020	1718	3214		2330	15110
172	0030	0963	3234		2496	14861
172	0050	0351	3245		2583	14622
172	0078	0154	3297		2640	14547

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1730	3214		2327	15110	0000	00000	4612
0010	1737	3214		2326	15114	0046	00002	4631
0020	1718	3214		2330	15110	0093	00009	4591
0030	0963	3234		2496	14861	0131	00019	3010
0050	0351	3245		2583	14622	0183	00039	2180
0075	0097 B	3293		2640	14520	0231	00069	1632

C-REF-NO 002 YR 1963 DEPTH 76 WAVES 1 3154 AIR T 16.9 VIS 95  
 CONS. NO 025 MONTH 8 MXSAMPD 01 WAVES 2 3175 WET B 15.8 STN 022  
 LAT 44-380N DAY 20 NO.DPTH 6 WND-DIR 310 WW-CODE 03  
 LON 52-275W HR 19.9 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1022.6 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
199	0000	168	3227		2349	15097
199	0010	1680	3227		2349	15098
199	0020	1654	3229		2357	15092
199	0030	1015	3234		2487	14880
199	0050	0368	3245		2581	14629
199	0075	0178	3312		2651	14559

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1680	3227		2349	15097	0000	00000	4406
0010	1680	3227		2349	15098	0044	00002	4409
0020	1654	3229		2357	15092	0088	00009	4340
0030	1015	3234		2487	14880	0126	00018	3092
0050	0368	3245		2581	14629	0179	00039	2195
0075	0178	3312		2651	14559	0226	00068	1537

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 3132 AIR T 16.6 VIS 93  
 CONS. NO 026 MONTH 8 MXSAMPD 03 WAVES 2 3174 WET B 15.2 STN 016  
 LAT 44-115N DAY 21 NO.DPTH 11 WND-DIR 310 WW-CODE 02  
 LON 52-460W HR 00.4 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1022.6 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
007	0000	165	3223		2353	15087
007	0010	1655	3223		2352	15090
007	0020	1077	3257		2495	14904
007	0030	0416	3292		2614	14652
007	0050	0160	3310		2650	14547
007	0075	0030	3348		2689	14498
004	0100	0258	3382		2700	14608
004	0150	0476	3416		2706	14714
004	0195	0573	3461		2730	14767
004	0240	0572	3474		2740	14776
004	0265	0499	3474		2749	14750

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1650	3223		2353	15087	0000	00000	4369
0010	1655	3223		2352	15090	0044	00002	4383
0020	1077	3257		2495	14904	0081	00008	3021
0030	0416	3292		2614	14652	0106	00014	1885
0050	0160	3310		2650	14547	0140	00027	1539
0075	0030	3348		2689	14498	0174	00049	1173
0100	0258	3382		2700	14608	0203	00074	1069
0125	0394	3401		2703	14673	0229	00105	1053
0150	0476	3416		2706	14714	0256	00142	1027
0175	0542	3442		2719	14748	0280	00182	0909
0200	0579	3464		2731	14771	0302	00224	0797
0225	0587	3472		2737	14779	0321	00266	0745
0250	0543	3476		2745	14766	0339	00309	0668

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2442 AIR T 18.0 VIS 95  
 CONS. NO 027 MONTH 8 MXSAMPD 03 WAVES 2 3163 WET B 16.3 STN 015  
 LAT 44-380N DAY 21 NO.DPTH 11 WND-DIR 240 WW-CODE 02  
 LON 53-450W HR 06.5 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1022.0 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
068	0000	181	3281		2359	15142
068	0010	1812	3281		2359	15144
068	0020	1802	3281		2361	15143
068	0030	1300	3306		2491	14989
068	0050	0651	3339		2624	14758
068	0075	0933	3485		2697	14890
065	0100	0800	3467		2704	14841
065	0150	0680	3447		2705	14800
065	0200	0756	3474		2716	14842
065	0250	0629	3470		2730	14800
065	0275	0561	3470		2739	14776

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1810	3281		2359	15142	0000	00000	4307
0010	1812	3281		2359	15144	0043	00002	4314
0020	1802	3281		2361	15143	0087	00009	4294
0030	1300	3306		2491	14989	0123	00018	3058
0050	0651	3339		2624	14758	0172	00037	1796
0075	0933	3485		2697	14890	0209	00059	1114
0100	0800	3467		2704	14841	0236	00083	1051
0125	0716	3453		2705	14811	0263	00114	1044
0150	0680	3447		2705	14800	0289	00151	1043
0175	0718 B	3460		2709	14821	0315	00194	1005
0200	0756	3474		2716	14842	0339	00241	0954
0225	0706	3474		2722	14826	0363	00292	0892
0250	0629	3470		2730	14800	0384	00345	0820

C-REF-NO 002 YR 1963 DEPTH 81 WAVES 1 2242 AIR T 15.8 VIS 95  
 CONS. NO 028 MONTH 8 MXSAMPO 01 WAVES 2 2263 WET B 15.2 STN 021  
 LAT 45-045N DAY 21 NO.DPTH 6 WND-DIR 220 WW-CODE 63  
 LON 53-120W HR 11.3 W-COLOR WND-FCE 03 CLD-TPE  
 MARSQ SQ 150 W-TRNSP BARO 1019.9 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
113	0000	149	3223		2388	15037
113	0010	1498	3223		2387	15041
113	0020	1465	3225		2395	15032
113	0030	0724	3250		2544	14772
113	0050	0162	3279		2625	14544
113	0079	-0019	3312		2662	14471

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1490	3223		2388	15037	0000	00000	4032
0010	1498	3223		2387	15041	0041	00002	4051
0020	1465	3225		2395	15032	0081	00008	3971
0030	0724	3250		2544	14772	0114	00016	2550
0050	0162	3279		2625	14544	0157	00033	1776
0075	-0098 C	3310		2663	14434	0197	00058	1411

C-REF-NO 002 YR 1963 DEPTH 72 WAVES 1 2263 AIR T 16.1 VIS 94  
 CONS. NO 029 MONTH 8 MXSAMPD 01 WAVES 2 2275 WET B 15.8 STN 020  
 LAT 45-195N DAY 21 NO.DPTH 6 WND-DIR 220 WW-CODE 63  
 LON 53-380W HR 14.0 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1015.2 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
140	0000	153	3238		2391	15051
140	0010	1532	3238		2391	15054
140	0020	1501	3238		2397	15045
140	0030	1350	3238		2429	14998
140	0050	0414	3263		2591	14651
140	0070	0053	3294		2644	14500

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1530	3238		2391	15051	0000	00000	4004
0010	1532	3238		2391	15054	0040	00002	4011
0020	1501	3238		2397	15045	0080	00008	3949
0030	1350	3238		2429	14998	0118	00018	3652
0050	0414	3263		2591	14651	0176	00040	2103

C-REF-NO 002 YR 1963 DEPTH 99 WAVES 1 2779 AIR T 17.4 VIS 93  
 CONS. NO 030 MONTH 8 MXSAMPD 01 WAVES 2 2779 WET B 17.2 STN 014  
 LAT 45-110N DAY 21 NO.DPTH 7 WND-DIR 270 WW-CODE 02  
 LON 54-165W HR 18.8 W-COLOR WND-FCE 07 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1014.2 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
188	0000	164	3239		2367	15086
188	0010	1649	3239		2365	15090
188	0020	1610	3239		2374	15080
188	0030	1333	3239		2433	14992
188	0050	0390	3257		2589	14640
188	0075	0103	3317		2660	14527
188	0097	0113	3321		2662	14535

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1640	3239		2367	15086	0000	00000	4230
0010	1649	3239		2365	15090	0043	00002	4253
0020	1610	3239		2374	15080	0085	00009	4171
0030	1333	3239		2433	14992	0124	00019	3612
0050	0390	3257		2589	14640	0182	00041	2125
0075	0103	3317		2660	14527	0227	00068	1450

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2974 AIR T 16.9 VIS 93  
 CONS. NO 031 MONTH 8 MXSAMPD 03 WAVES 2 2779 WET B 16.3 STN 013  
 LAT 45-062N DAY 21 NO.DPTH 11 WND-DIR 290 WW-CODE 02  
 LON 54-335W HR 20.6 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1013.8 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
208	0000	166	3266		2383	15095
208	0010	1650	3266		2386	15094
208	0020	1590	3266		2399	15077
208	0030	0808	3295		2568	14811
208	0050	0509	3331		2635	14700
208	0075	0227	3360		2685	14588
206	0100	0264	3375		2694	14610
206	0150	0466	3420		2710	14710
206	0200	0519	3433		2714	14742
206	0250	0480	3442		2726	14735
206	0275	0454	3449		2734	14730

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1660	3266		2383	15095	0000	00000	4077
0010	1650	3266		2386	15094	0041	00002	4058
0020	1590	3266		2399	15077	0081	00008	3931
0030	0808	3295		2568	14811	0112	00016	2329
0050	0509	3331		2635	14700	0153	00032	1690
0075	0227	3360		2685	14588	0189	00054	1210
0100	0264	3375		2694	14610	0219	00081	1127
0125	0364 B	3398		2704	14660	0246	00112	1042
0150	0466	3420		2710	14710	0272	00148	0986
0175	0508	3429		2712	14733	0296	00189	0970
0200	0519	3433		2714	14742	0321	00236	0954
0225	0506	3437		2719	14741	0344	00287	0910
0250	0480	3442		2726	14735	0366	00341	0848

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 2974 AIR T 16.1 VIS 90  
 CONS. NO 032 MONTH 8 MXSAMPD 03 WAVES 2 2779 WET B 15.5 STN 010  
 LAT 45-020N DAY 22 NO.DPTH 11 WND-DIR 290 WW-CODE 02  
 LON 55-280W HR 02.8 W-COLOR WND-FCE 05 CLD-TPE  
 MARSID SQ 150 W-TRNSP BARO 1015.2 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
031	0000	151	3225		2385	15043
031	0010	1511	3227		2387	15046
031	0020	1499	3227		2389	15043
031	0030	1090	3268		2501	14912
031	0050	0452	3315		2629	14674
031	0075	0395	3380		2686	14663
028	0090	0362	3382		2691	14651
028	0140	0477	3436		2722	14715
028	0190	0497	3436		2719	14732
028	0235	0477	3445		2729	14732
028	0255	0476	3454		2736	14736

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1510	3225		2385	15043	0000	00000	4058
0010	1511	3227		2387	15046	0041	00002	4048
0020	1499	3227		2389	15043	0081	00008	4026
0030	1090	3268		2501	14912	0116	00017	2964
0050	0452	3315		2629	14674	0164	00035	1749
0075	0395	3380		2686	14663	0201	00058	1206
0100	0375	3392		2698	14660	0230	00084	1098
0125	0429	3419		2713	14690	0256	00114	0953
0150	0487	3438		2722	14721	0279	00146	0876
0175	0498	3438		2721	14730	0301	00183	0888
0200	0493	3437		2721	14732	0324	00226	0895
0225	0482	3442		2726	14732	0346	00274	0847
0250	0478	3452		2734	14736	0366	00324	0773

C-REF-NO 002 YR 1963 DEPTH 129 WAVES 1 2963 AIR T 15.8 VIS 95  
 CONS. NO 033 MONTH 8 MXSAMPD 01 WAVES 2 2768 WET B 14.7 STN 011  
 LAT 45-195N DAY 22 NO.DPTH 8 WND-DIR 290 WW-CODE 00  
 LUN 55-060W HR 07.5 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1013.8 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
075	0000	142	3209		2392	15012
075	0010	1426	3209		2391	15016
075	0020	1223	3225		2443	14951
075	0030	0663	3247		2550	14748
075	0050	0241	3266		2609	14577
075	0075	-0059	3315		2666	14452
075	0100	-0021	3317		2666	14474
075	0125	-0029	3321		2670	14475

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1420	3209		2392	15012	0000	00000	3994
0010	1426	3209		2391	15016	0040	00002	4008
0020	1223	3225		2443	14951	0078	00008	3510
0030	0663	3247		2550	14748	0108	00015	2495
0050	0241	3266		2609	14577	0153	00033	1931
0075	-0059	3315		2666	14452	0194	00059	1384
0100	-0021	3317		2666	14474	0229	00090	1384
0125	-0029	3321		2670	14475	0264	00130	1349

C-REF-NO 002 YR 1963 DEPTH 76 WAVES 1 2963 AIR T 14.7 VIS 92  
 CONS. NO 034 MONTH 8 MXSAMPD 01 WAVES 2 2768 WET B 14.1 STN 012  
 LAT 45-295N DAY 22 NO.DPTH 6 WND-DIR 290 WW-CODE 03  
 LON 54-340W HR 10.3 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1014.5 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
103	0000	145	3218		2393	15023
103	0010	1454	3218		2392	15026
103	0020	1441	3218		2395	15024
103	0030	0901	3239		2510	14839
103	0050	-0036	3286		2642	14455
103	0075	-0008	3303		2654	14474

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1450	3218		2393	15023	0000	00000	3987
0010	1454	3218		2392	15026	0040	00002	3998
0020	1441	3218		2395	15024	0080	00008	3975
0030	0901	3239		2510	14839	0115	00017	2879
0050	-0036	3286		2642	14455	0160	00034	1616
0075	-0008	3303		2654	14474	0199	00059	1498

C-REF-NO 002 YR 1963 DEPTH 120 WAVES 1 2966 AIR T 15.2 VIS 92  
 CONS. NO 035 MONTH 8 MXSAMPD 01 WAVES 2 2978 WET B 14.7 STN 20A  
 LAT 45-360N DAY 22 NO.DPTH 8 WND-DIR 290 WW-CODE 02  
 LON 54-080W HR 12.8 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1014.2 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
128	0000	138	3212		2403	15000
128	0010	1380	3212		2403	15001
128	0020	1350	3212		2409	14993
128	0030	0399	3261		2591	14641
128	0050	-0008	3294		2647	14469
128	0075	-0088	3312		2665	14438
128	0100	-0078	3322		2673	14449
128	0118	-0073	3324		2674	14454

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1380	3212		2403	15000	0000	00000	3894
0010	1380	3212		2403	15001	0039	00002	3896
0020	1350	3212		2409	14993	0078	00008	3841
0030	0399	3261		2591	14641	0108	00015	2102
0050	-0008	3294		2647	14469	0145	00030	1567
0075	-0088	3312		2665	14438	0182	00053	1397
0100	-0078	3322		2673	14449	0216	00084	1322

C-REF-NO 002 YR 1963 DEPTH 92 WAVES 1 2966 AIR T 14.9 VIS 92  
 CONS. NO 036 MONTH 8 MXSAMPD 01 WAVES 2 2978 WET B 14.7 STN 20B  
 LAT 45-540N DAY 22 NO.DPTH 7 WND-DIR 290 WW-CODE 00  
 LON 54-370W HR 16.0 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1012.5 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
160	0000	145	3218		2393	15023
160	0010	1450	3218		2393	15025
160	0020	1382	3223		2411	15005
160	0030	0525	3259		2576	14693
160	0050	-0025	3295		2649	14461
160	0075	-0094	3303		2658	14434
160	0089	-0093	3304		2658	14437

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1450	3218		2393	15023	0000	00000	3987
0010	1450	3218		2393	15025	0040	00002	3990
0020	1382	3223		2411	15005	0079	00008	3822
0030	0525	3259		2576	14693	0110	00015	2245
0050	-0025	3295		2649	14461	0148	00030	1552
0075	-0094	3303		2658	14434	0186	00055	1463

C-REF-NO 002 YR 1963 DEPTH 70 WAVES 1 2966 AIR T 15.5 VIS 92  
 CONS. NO 037 MONTH 8 MXSAMPD 01 WAVES 2 2978 WET B 15.2 STN 007  
 LAT 46-030N DAY 22 NO.DPTH 6 WND-DIR 290 WW-CODE 00  
 LON 55-392W HR 21.8 W-COLOR WND-FCE 05 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1009.8 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
218	0000	146	3191		2370	15023
218	0010	1460	3191		2370	15025
218	0020	1289	3205		2415	14971
218	0030	0372	3256		2590	14629
218	0050	0013	3272		2628	14475
218	0067	-0025	3274		2632	14461

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1460	3191		2370	15023	0000	00000	4205
0010	1460	3191		2370	15025	0042	00002	4208
0020	1289	3205		2415	14971	0082	00008	3777
0030	0372	3256		2590	14629	0112	00015	2115
0050	0013	3272		2628	14475	0151	00031	1745

C-REF-NO 002 YR 1963 DEPTH 48 WAVES 1 3164 AIR T 16.1 VIS 91  
 CONS. NO 038 MONTH 8 MXSAMPD 00 WAVES 2 2966 WET 8 14.9 STN 009  
 LAT 45-432N DAY 23 NO.DPTH 5 WND-DIR 310 WW-CODE 02  
 LON 56-082W HR 01.1 W-COLOR WND-FCE 04 CLD-TPE  
 MARSD SQ 150 W-TRNSP. BARO 1010.8 CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
011	0000	148	3207		2378	15032
011	0010	1498	3207		2374	15039
011	0020	1450	3214		2390	15026
011	0030	0290	3248		2591	14592
011	0046	0289	3250		2592	14595

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1480	3207		2378	15032	0000	00000	4128
0010	1498	3207		2374	15039	0042	00002	4168
0020	1450	3214		2390	15026	0083	00008	4022
0030	0290	3248		2591	14592	0114	00016	2105

C-REF-NO 002 YR 1963 DEPTH 285 WAVES 1 3464 AIR T 15.5 VIS 95  
 CONS. NO 039 MONTH 8 MXSAMPD 03 WAVES 2 2966 WET B 14.4 STN 008  
 LAT 45-540N DAY 23 NO.DPTH 11 WND-DIR 340 WW-CODE 01  
 LON 56-550W HR 06.0 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1011.1 CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
063	0000	155	3205		2361	15054
063	0010	1565	3205		2358	15060
063	0020	1514	3212		2375	15046
063	0030	0590	3250		2561	14719
063	0050	0086	3288		2637	14511
063	0075	-0070	3292		2648	14444
060	0100	-0049	3306		2658	14460
060	0150	0205	3358		2685	14590
060	0200	0482	3434		2719	14727
060	0250	0491	3452		2733	14741
060	0275	0483	3460		2740	14743

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1550	3205		2361	15054	0000	00000	4287
0010	1565	3205		2358	15060	0043	00002	4321
0020	1514	3212		2375	15046	0086	00009	4167
0030	0590	3250		2561	14719	0119	00017	2386
0050	0086	3288		2637	14511	0160	00033	1661
0075	-0070	3292		2648	14444	0200	00058	1556
0100	-0049	3306		2658	14460	0238	00092	1456
0125	0059	3329		2671	14517	0273	00133	1337
0150	0205	3358		2685	14590	0305	00178	1210
0175	0359 B	3398		2704	14666	0334	00225	1043
0200	0482	3434		2719	14727	0358	00272	0904
0225	0505	3447		2727	14742	0380	00320	0838
0250	0491	3452		2733	14741	0401	00370	0785

C-REF-NO 002 YR 1963 DEPTH 41 WAVES 1 3664 AIR T 14.4 VIS 99  
 CONS. NO 040 MONTH 8 MXSAMPD 00 WAVES 2 3666 WET 8 12.7 STN 006  
 LAT 46-27.0N DAY 23 NO.DPTH 5 WND-DIR 340 WW-CODE 01  
 LON 57-015W HR 10.5 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1012.5 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
105	0000	142	3189		2377	15010
105	0010	1426	3189		2376	15014
105	0020	1393	3189		2382	15004
105	0030	0431	3230		2563	14650
105	0040	0391	3230		2567	14635

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1420	3189		2377	15010	0000	00000	4141
0010	1426	3189		2376	15014	0042	00002	4155
0020	1393	3189		2382	15004	0083	00008	4093
0030	0431	3230		2563	14650	0116	00016	2366

C-REF-NO C02 YR 1963 DEPTH 285 WAVES 1 3475 AIR T 14.1 VIS 99  
 CONS. NO 041 MONTH 8 MXSAMPD 03 WAVES 2 3466 WET B 13.0 STN 001  
 LAT 47-030N DAY 23 NO.DPTH 11 WND-DIR 340 WW-CODE 02  
 LON 57-020W HR 14.9 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1011.1 CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
152	0000	138	3178		2377	14995
152	0010	1387	3178		2375	14999
152	0020	1350	3185		2388	14990
152	0030	0588	3229		2545	14715
152	0050	0114	3265		2617	14520
152	0075	0011	3288		2641	14481
149	0095	-0028	3288		2643	14466
149	0145	0028	3315		2662	14504
149	0190	0553	3431		2709	14754
149	0240	0477	3440		2725	14732
149	0260	0459	3452		2736	14730

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1380	3178		2377	14995	0000	00000	4143
0010	1387	3178		2375	14999	0042	00002	4159
0020	1350	3185		2388	14990	0083	00008	4039
0030	0588	3229		2545	14715	0116	00017	2541
0050	0114	3265		2617	14520	0160	00034	1852
0075	0011	3288		2641	14481	0204	00062	1621
0100	-0040	3287		2643	14461	0244	00098	1602
0125	-0041 B	3296		2650	14466	0284	00144	1539
0150	0089 B	3328		2669	14534	0320	00195	1356
0175	0384 D	3393		2698	14676	0351	00246	1104
0200	0564 B	3437		2712	14761	0378	00296	0980
0225	0534 C	3442		2720	14753	0402	00348	0904
0250	0507 C	3454		2732	14748	0423	00400	0790

C-REF-NO 002 YR 1963 DEPTH 120 WAVES 1 3476 AIR T 14.9 VIS 99  
 CONS. NO 042 MONTH 8 MXSAMPD 01 WAVES 2 3476 WET B 13.0 STN 002  
 LAT 46-435N DAY 23 NO.DPTH 8 WND-DIR 340 WW-CODE 02  
 LON 56-340W HR 18.3 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARD 1012.5 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
183	0000	150	3180		2353	15035
183	0010	1508	3174		2347	15038
183	0020	1308	3194		2403	14977
183	0030	0602	3230		2544	14721
183	0050	0309	3248		2589	14604
183	0075	0066	3270		2624	14503
183	0100	-0072	3281		2639	14446
183	0118	-0082	3290		2647	14445

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1500	3180		2353	15035	0000	00000	4367
0010	1508	3174		2347	15038	0044	00002	4430
0020	1308	3194		2403	14977	0086	00009	3894
0030	0602	3230		2544	14721	0118	00017	2549
0050	0309	3248		2589	14604	0165	00035	2121
0075	0066	3270		2624	14503	0215	00066	1786
0100	-0072	3281		2639	14446	0258	00105	1638

C-REF-NO 002 YR 1963 DEPTH 126 WAVES 1 3476 AIR T 14.1 VIS 99  
 CONS. NO 043 MONTH 8 MXSAMPD 01 WAVES 2 3476 WET B 12.2 STN 003  
 LAT 46-330N DAY 23 NO.DPTH 8 WND-DIR 340 WW-CODE 02  
 LON 56-030W HR 21.4 W-COLOR WND-FCE 06 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1012.5 CLD-AMT 0 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
214	0000	110	3201		2447	14902
214	0010	1098	3203		2449	14903
214	0020	0662	3232		2538	14744
214	0030	0237	3250		2597	14570
214	0050	0056	3265		2621	14494
214	0075	-0021	3272		2630	14464
214	0100	-0100	3288		2646	14434
214	0125	-0114	3295		2652	14432

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1100	3201		2447	14902	0000	00000	3469
0010	1098	3203		2449	14903	0035	00002	3453
0020	0662	3232		2538	14744	0065	00006	2605
0030	0237	3250		2597	14570	0089	00012	2048
0050	0056	3265		2621	14494	0128	00028	1819
0075	-0021	3272		2630	14464	0172	00056	1729
0100	-0100	3288		2646	14434	0214	00093	1575
0125	-0114	3295		2652	14432	0253	00138	1515

C-REF-NO 002 YR 1963 DEPTH 192 WAVES 1 3443 AIR T 14.1 VIS 94  
 CONS. NO 044 MONTH 8 MXSAMPD 02 WAVES 2 3455 WET B 12.4 STN 004  
 LAT 46-280N DAY 24 NO.DPTH 9 WND-DIR 340 WW-CODE 02  
 LON 54-540W HR 03.6 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1014.2 CLD-AMT 2 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
036	0000	128	3200		2413	14965
036	0010	1283	3198		2411	14967
036	0020	1272	3201		2416	14965
036	0030	0808	3223		2511	14801
036	0050	0147	3268		2618	14536
036	0075	-0027	3288		2643	14463
036	0100	-0088	3303		2658	14441
036	0150	-0096	3312		2665	14447
036	0190	-0096	3312		2665	14454

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280	3200		2413	14965	0000	00000	3793
0010	1283	3198		2411	14967	0038	00002	3815
0020	1272	3201		2416	14965	0076	00008	3775
0030	0808	3223		2511	14801	0110	00016	2865
0050	0147	3268		2618	14536	0157	00035	1850
0075	-0027	3288		2643	14463	0201	00062	1604
0100	-0088	3303		2658	14441	0239	00096	1464
0125	-0102	3310		2664	14440	0275	00138	1405
0150	-0096	3312		2665	14447	0311	00188	1390
0175	-0108	3314		2667	14446	0345	00246	1367

C-REF-NO 002 YR 1963 DEPTH 147 WAVES 1 0432 AIR T 11.6 VIS 97  
 CONS. NO 045 MONTH 8 MXSAMPD 01 WAVES 2 3454 WET B 10.5 STN 005  
 LAT 46-085N DAY 24 NO.DPTH 8 WND-DIR 040 WW-CODE 03  
 LON 53-490W HR 09.1 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1017.2 CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
091	0000	126	3210		2425	14959
091	0010	1264	3209		2423	14962
091	0020	1194	3214		2440	14940
091	0030	0239	3265		2608	14573
091	0050	-0057	3284		2641	14445
091	0075	-0094	3294		2650	14433
091	0100	-0123	3313		2667	14426
091	0145	-0074	3331		2680	14459

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1260	3210		2425	14959	0000	00000	3683
0010	1264	3209		2423	14962	0037	00002	3700
0020	1194	3214		2440	14940	0073	00007	3539
0030	0239	3265		2608	14573	0101	00014	1936
0050	-0057	3284		2641	14445	0137	00028	1623
0075	-0094	3294		2650	14433	0177	00054	1532
0100	-0123	3313		2667	14426	0213	00086	1376
0125	-0103	3322		2673	14441	0247	00125	1316

C-REF-NO 002 YR 1963 DEPTH 96 WAVES 1 3622 AIR T 12.4 VIS 99  
 CONS. NO 046 MONTH 8 MXSAMPD 01 WAVES 2 3454 WET B 11.3 STN 05A  
 LAT 46-250N DAY 24 NO.DPTH 7 WND-DIR 360 WW-CODE 01  
 LON 53-300W HR 11.9 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
119	0000	102	3223		2478	14876
119	0010	1013	3223		2479	14875
119	0020	0599	3250		2560	14721
119	0030	0049	3286		2638	14491
119	0050	-0071	3297		2652	14440
119	0075	-0090	3299		2654	14436
119	0095	-0090	3304		2658	14440

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1020	3223		2478	14876	0000	00000	3176
0010	1013	3223		2479	14875	0032	00002	3167
0020	0599	3250		2560	14721	0060	00006	2395
0030	0049	3286		2638	14491	0080	00011	1656
0050	-0071	3297		2652	14440	0112	00024	1519
0075	-0090	3299		2654	14436	0150	00048	1495

C-REF-NO 002 YR 1963 DEPTH 47 WAVES 1 0522 AIR T 12.7 VIS 97  
 CONS. NO 047 MONTH 8 MXSAMPD 00 WAVES 2 3444 WET B 11.3 STN 05B  
 LAT 46-33'N DAY 24 NO.DPTH 5 WND-DIR 050 WW-CODE 02  
 LON 53-08'W HR 14.0 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
140	0000	124	3176		2402	14948
140	0010	1227	3176		2405	14945
140	0020	0674	3221		2528	14747
140	0030	0327	3252		2591	14609
140	0046	0076	3279		2631	14504

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1240	3176		2402	14948	0000	00000	3897
0010	1227	3176		2405	14945	0039	00002	3876
0020	0674	3221		2528	14747	0072	00007	2702
0030	0327	3252		2591	14609	0096	00013	2105



## REFERENCES

Knudsen, K., 1901	Hydrographischen Tabellen. Copenhagen, 63 pp.
Ekman, V. W., 1908	Die Zusammendruckbarkeit des Meerwassers nebst einigen Werten fur Wasser und Quecksilber. Publ. Circ. Cons. Explor. Mer., No. 43, 47 pp.
Strickland, J. D. H.	MS, 1958. Standard methods of seawater analyses. Volume II. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 19, 78 pp.
Strickland, J. D. H. and T. R. Parsons, T. R., 1960.	A manual of seawater analysis. Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.
Wilson, W. D., 1960	Equation for the speed of sound in seawater. Journ. Acoust. Soc., America 32 (10); p. 1357.
Rattray, M. Jr., 1962	Interpolation errors and oceanographic sampling. Deep Sea Research, vol. 9, pp 25 to 37.
Sauer, C. D., and Fofonoff, N. P.	Oceans II, a computer program for processing oceanographic data (Publication pending).





DATA RECORD

# EASTERN ARCTIC--1960

No. 18

1964 Data Record Series

Canadian Oceanographic Data Centre

Programmed by the  
Canadian Committee on Oceanography

1964

ROGER DUHAMEL, F. R. S. C.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1964  
Cat. No. 158-1/1964-18

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

Eastern Arctic

CODC Reference CRN 329 and CRN 340

No. 18

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography



DEPARTMENT OF MINES AND TECHNICAL SURVEYS  
and  
FISHERIES RESEARCH BOARD OF CANADA  
and  
DALHOUSIE UNIVERSITY

Eastern Arctic - 1960

Ships:	MV "Theta"	CCGS "Labrador"
Local Cruise Designation:	TA-60-2	Lab-9-60
Cruise Period:	August and September	August and September

CANADIAN HYDROGRAPHIC SERVICE - Ottawa  
DIVISION OF OCEANOGRAPHIC RESEARCH - Ottawa

ATLANTIC OCEANOGRAPHIC GROUP -  
Bedford Institute of Oceanography, Dartmouth, N.S.

INSTITUTE OF OCEANOGRAPHY - Dalhousie University, Halifax, N.S.



## PREFACE

This data record consists mainly of serial temperature and salinity data, and bathythermograms obtained in eastern Arctic waters during the 1960 navigation season in the CCGS "Labrador" of the Department of Transport, and in the MV "Theta" on charter to the Department of Mines and Technical Surveys. A short series of current observations in the same season in Fury and Hecla Strait in CHS "Baffin" is included. The presentation of data in this report is subject to modification and possible correction at a later date. The original records for each vessel are filed with the Marine Sciences Branch, Ottawa.



## **SECTION I**

**Description of data collection procedures**



THETA



Christensen Canadian Enterprises Ltd.



A black and white photograph of a Canadian Coast Guard ship, identified by the name "LABRADOR" on its superstructure. The ship is a large vessel with a white hull and dark superstructure, featuring multiple levels and various equipment. The number "50" is visible on the bow. The background shows a hazy, possibly snowy or overcast sky.

"LABRADOR"

Canadian Coast Guard Service



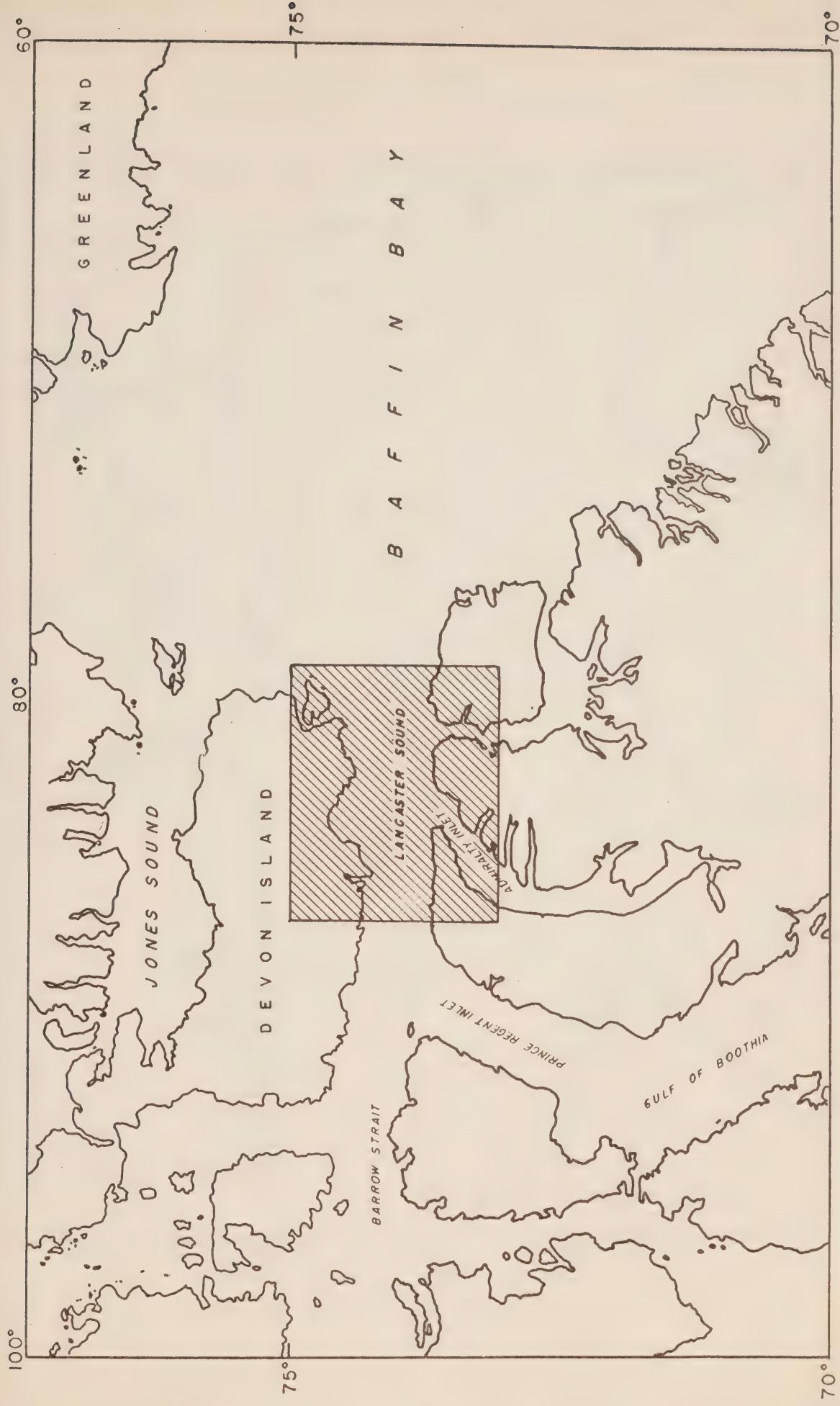


Figure 1  
Lancaster Sound and the area of the "Theta" survey (shaded)



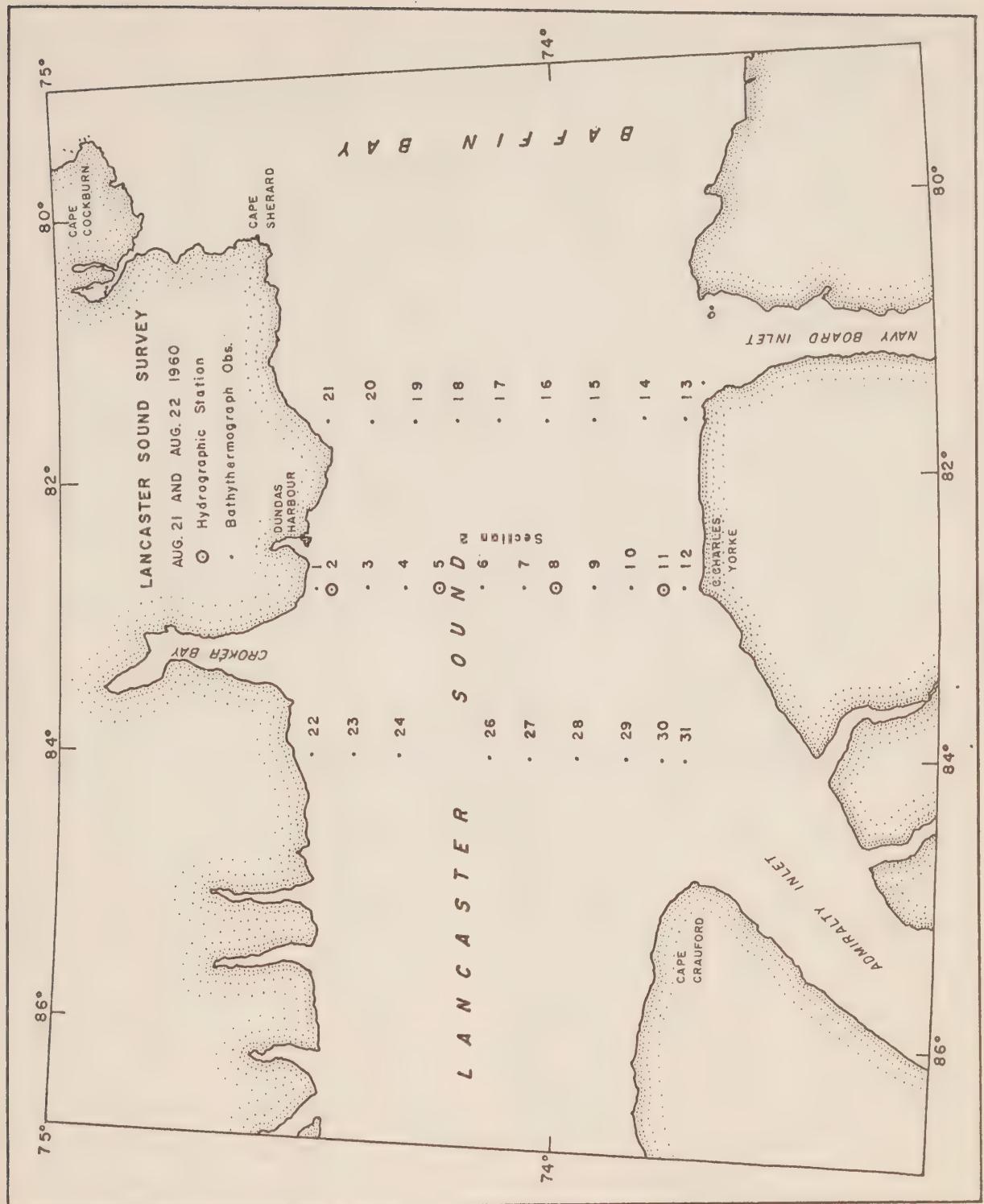


Figure 2



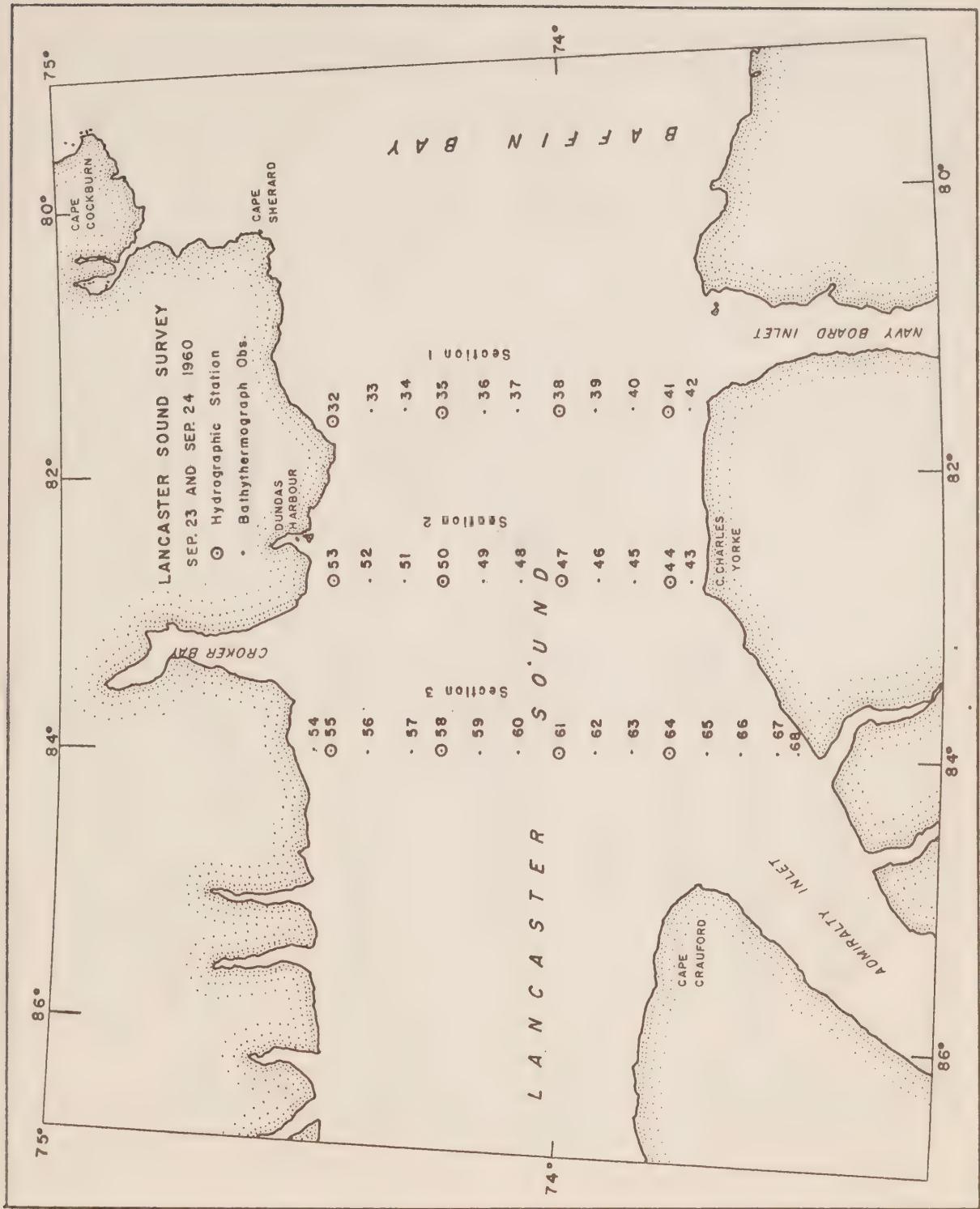


Figure 3



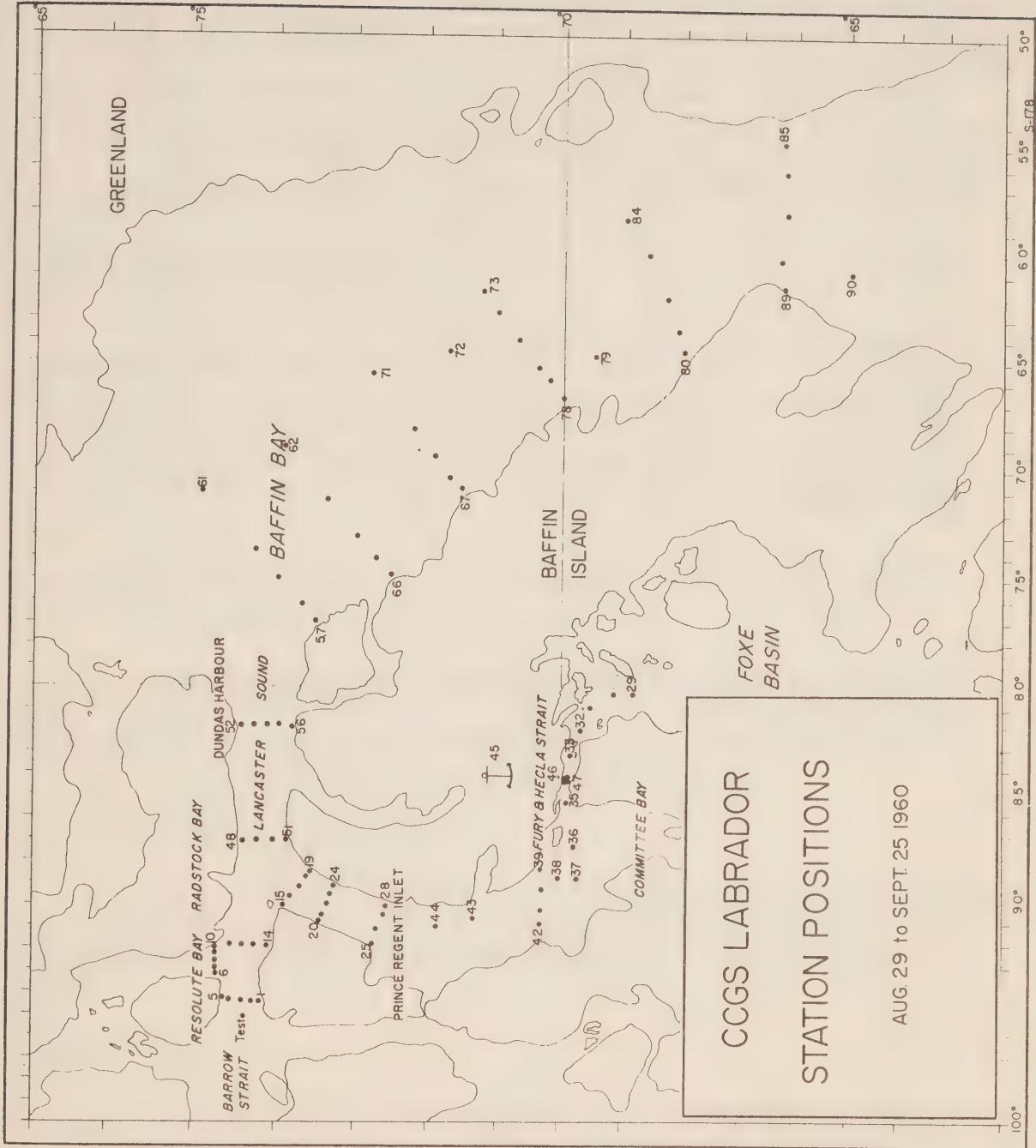


Figure 4



## THE "THETA" PROGRAMME

### INTRODUCTION:

The major portion of the programme of this vessel concerned current observations in a section across Lancaster Sound (Fig. 1), using moored self-recording meters and current meters lowered from the ship. Opportunities were utilized to obtain serial data and bathythermograms, and as shown in Table 1, 16 stations were occupied and 68 BT lowerings made. The approximate positions of the observations are shown in Figures 2 and 3. A similar programme carried out in Hudson Strait in "Theta" during the 1959 navigation season has been reported by the Canadian Hydrographic Service (1960), and Farquharson and Sauer (1960) described the material.

### OBSERVATION PROCEDURES:

Serial data were obtained at standard depths using Knudsen type reversing bottles fitted with Richter & Wiese thermometers. Two protected thermometers were attached to each bottle and an unprotected thermometer was added to the bottles at the 400 and 700 metre depths. Generally a bottom sample was obtained, followed by a BT lowering, and finally a bottle cast. The time indicated in the data record headings is the GMT of the bottle cast.

Surface samples were obtained using a two gallon bucket. Surface temperature observations were made at the time of the serial cast using a mercury thermometer adapted for towing.

Salinity samples were drawn into standard type storage bottles with patent stoppers fitted with rubber washers. The salinity of the samples was determined later at the Pacific Oceanographic Group using a conductivity salinometer and method described by Strickland (1958).

### BATHYTHERMOGRAPH DATA:

The reproduction of the BT traces was obtained by free-hand drawing on preprinted multilith masters. The original slide number and time/date is indicated under each grid, which relates to the data of Table 1 and Figures 2 and 3.

### PERSONNEL:

Mr. A.M. Holler was responsible for the oceanographic observations, and was assisted in the field by the Officer-in-Charge, Mr. D. Dobson, and other members of the survey party, including Messrs J.L. MacAngus, C. Langford, G. Godin, A. Cadieux, A. Stanzell, R. Balkwill, and J. MacDougall.



## THE "LABRADOR" PROGRAMME

### INTRODUCTION:

During the normal period of duty of the icebreaker CCGS "Labrador" in the arctic in 1960 the opportunity to carry out an oceanographic survey was extended by the Department of Transport. Through the co-operation of other member agencies of the Canadian Committee on Oceanography with regard to personnel and equipment, it was possible to utilize the vessel for a period of about one month. Stations were occupied as shown in Figure 4, and in Table 2 the extent and type of data obtained are indicated.

The programme was developed in consultation with personnel of the Atlantic Oceanographic Group which agency provided most of the equipment. It was proposed, where possible, to re-occupy the station positions of earlier years, and that special effort be made to carry the observations close into the east coast of Baffin Island. A number of stations were to be occupied in Baffin Bay in positions requested by the United States Naval Oceanographic Office. A plankton sampling programme was to be carried out on behalf of the Arctic Unit of the Fisheries Research Board of Canada. It was arranged with members of the Canadian Hydrographic Service that a series of current observations be attempted in Fury and Hecla Strait during the period the CHS "Baffin" was to be engaged there in hydrographic work.

### EXTRACT OF CRUISE LOG

August	27	Party arrive Resolute Bay and board CCGS 'N.B. McLean'.
August	29	Party join CCGS "Labrador". Occupy test station in Barrow Strait and begin section across the Strait.
August	30	Occupy stations 2 to 15 in Barrow Strait.
August	31	Occupy stations 16 to 19 in northern Prince Regent Inlet. Proceed to rendezvous and refuel CSS "Baffin" in Radstock Bay.
September	1	Leave Radstock Bay and proceed Resolute for mail drop.
September	2	Occupy stations 20 to 24.
September	3	Occupy stations 25 to 28 and proceed Hall Beach.
September	4	En route Foxe Basin.
September	5	Arrive and depart for rendezvous CSS "Baffin" in Prince Regent Inlet. Occupy stations 29 to 31.

September 6 Occupy stations 32 to 39.

September 7 Occupy stations 40 to 44.

September 8 Meet "Baffin" and proceed in company to Fury and Hecla Strait.

September 9 Party move to "Baffin".

September 10 "Baffin" anchor in position for current observations.

September 11 In "Baffin"; current and BT observations.

September 12 Party return to the "Labrador". Occupy stations 46 and 47 in Fury and Hecla Strait.

September 13 En route Fury Beach.

September 14 In Prince Regent Inlet.

September .. 15 Leave and occupy stations 48 to 51 in western Lancaster Sound. Arrive Dundas Harbour and rendezvous MV "Theta". Twenty tons fresh water and 1 case salinity storage bottles to "Theta".

September 16 Leave and occupy stations 52 to 56.

September 17 Occupy stations 57 to 62.

September 18 Occupy stations 63 to 67.

September 19 Occupy stations 68 to 71.

September 20 Occupy stations 72 to 77.

September 21 Occupy stations 78 to 82.

September 22 Occupy stations 83 to 84.

September 23 Occupy stations 85 to 89.

September 24 Anchored in vicinity Cape Dyer.

September 25 Leave and occupy station 90.

September 26 Arrive Frobisher Bay.

September 27 Party leave en-route Montreal.

OBSERVATION PROCEDURES:

At each station casts were made for serial temperature and salinity data using Knudsen type reversing bottles, each fitted with a Negretti and Zambra protected thermometer. Open tube thermometers of the same type were used on the deeper casts. As the supply of equipment was limited, each cast was generally restricted to a total of six reversing bottles. Deep casts were made first, followed by the shallow casts and finally a BT lowering. The time indicated in the data record headings is the GMT of the shallow cast. At some stations a vertical plankton tow from 150 metre depth with a No. 6 net 1/2 metre in diameter was made.

Samples for salinity determinations were drawn into glass bottles with patent stoppers fitted with rubber washers. Thermometers were read twice, independently. Microplankton samples were drawn into polythene bottles and a preservative added. Surface observations were made using a bucket and hand-held thermometer. Because of the limited supply of storage bottles, surface salinity samples were not obtained at stations 72 to 84. Salinity determinations were carried out later at the Atlantic Oceanographic Group using a chemical titration technique. Plankton samples were forwarded to the Arctic Unit, and Grainger (1963) has described a portion of the material.

BATHYTHERMOGRAPH DATA:

The reproduction of the BT traces was obtained by free-hand drawing on preprinted multilith masters. Only the original slide number is shown, which relates to the data of Table II and figure 4.

CURRENT DATA:

At the anchor station in Fury and Hecla Strait observations with an Ekman (1932) current meter, a surface captive drogue, and a BT were to be attempted once each hour. Due to moderate and gusty winds and to inadequate mooring, the ship's movement during the initial period of observations was excessive, so that this series is not considered to be useful and therefore not reported. During the last 12 hours the vessel was moored bow and stern, resulting in generally satisfactory current data.

PERSONNEL:

The scientific party comprised:

F. Barber  
J. Lazier  
G. Taylor  
W.W. Watt

Department of Mines & Technical Surveys  
Department of Mines & Technical Surveys  
Fisher ies Research Board  
Institute of Oceanography, Dalhousie University



## **SECTION II**

**Description of the machine-generated data record**



## INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a standard deviation ( $\sigma$ ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "GENERAL INFORMATION" of section II of the data record.

The measurement error estimate of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e.,  $1\sigma = A$ ,  $2\sigma = B$ , etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O<sub>2</sub>) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement ( $\sigma$ ) under normal routine field conditions by:

**CANADIAN OCEANOGRAPHIC DATA CENTRE**

1 IDENT. CODE	2 LATITUDE (N = +)	3 LONGITUDE (W = +)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
COUNTRY INST.	DEG. <sup>o</sup>	MIN.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10						
1 B																																					
S	WATER	WAVES I	WAVES II	WIND	BAROMETER	AIR TEMP.	WET BULB	W.W. CODE	CLOUD	HOURS AFTER	UNASSIGNED	CRUISE REFERENCE	CONSEC. NUMBER	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
A																																					
Z																																					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
TIME	DEPTH OF SAMPLE	TEMPERATURE	SALINITY	OXYGEN	PO <sub>4</sub> - P	TOTAL - P	NO <sub>2</sub> - N	NO <sub>3</sub> - N	SiO <sub>3</sub> - Si	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38				
W.M.T.																																				
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38		
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38			
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38				
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38					
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38						
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38							
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38								
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38									
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38										
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38											
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38												
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38													
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38														
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38															
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38																
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38																	
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38																		

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

COLUMNS 74-75 AS Q.D.

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left( \frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2}, \text{ where}$$

$\sigma_i$  = Standard deviation of the combined error estimates at standard oceanographic depth,

$\Delta V_i$  = the interpolation error estimate of variable "V" at standard oceanographic depth =  $^{1/3} (V_{i_1} - V_{i_2})$

$\gamma$  = Interpolation polynomial coefficient.

$Z_j$  = Observed depth.

$Z_i$  = Standard oceanographic depth, such that:  $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction  $\frac{\sigma_i}{\sigma}$ , if  $\geq 2$ , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.).

With respect to the interpolated value of the salinity variable if reported to three decimal digits, the **interpolation error estimate** is given only when  $\frac{\sigma_i}{\sigma} \geq 2$  (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

## EXPLANATION OF DATA RECORD HEADINGS

### MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE NUMBER: Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE NUMBER: Indicates the chronological order in which the stations were occupied.

(3) LATITUDE: Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.  
It is reported to tenths of hours (Table 1).  
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).  
00 m - 50 m = 00  
51 m - 150 m = 01  
151 m - 250 m = 02  
etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).

(14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;

NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.

(15) WAVES 1  
 $(d_w d_w P_w H_w\text{-code})$ : The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2  
 $(d_w d_w P_w H_w\text{-code})$ : The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:-wind variable or direction unknown.

(18) WIND FORCE (WND-FCE): Beaufort Notation (See Table 6).

WIND SPEED (WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.

(19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

(20) AIR TEMPERATURE: In degrees Celsius.

(21) WET BULB: In degrees Celsius.

(22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677

(23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.

(24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700

(25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.

(26) STATION: A station reference number, assigned by the institute prior to, or during the survey.

(27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

32

## OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO <sub>4</sub>	(9) -P-	(10) NO <sub>2</sub>	(11) NO <sub>3</sub>	(12) SiO <sub>3</sub>
					(13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.

(3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section.  
An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) SALINITY: Salinity as defined by:  $S = 0.03 + 1.805 C1\%$ , reported in:  
a. 1/100 parts per 1000, or  
b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)  
In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.  
An alphabetical character following the value is the measurement error estimate as referred to under (3).

(6) SIGMA-T: The specific gravity anomaly as defined by: (Specific gravity - 1) X 10<sup>3</sup> (e.g., σ<sub>t</sub> reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO <sub>4</sub>	Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO <sub>2</sub>	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre - No dissolved nitrogen included -
(11) NO <sub>3</sub>	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO <sub>3</sub>	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

#### INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

(1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "INTRODUCTION" to section II of the data record).

(3) SALINITY:

- A. The reported salinity values are observed to three decimal places.
  - (i) the interpolation error estimate is less than twice the standard deviation of measurement
    - the interpolated value is reported to three decimal places (e.g., 30.139).
  - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
    - the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).
- B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
  - the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P \delta dp$$

$\Delta D$  is expressed in dynamic metres ( $10^5$  ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL ENERGY ANOMALY: The Potential energy anomaly  $\chi$  as defined by:

$$\chi = 1/g \int_0^P p \delta dp = \int_0^Z \rho p \delta dz$$

$\chi$  is expressed in units of  $10^8$  ergs/cm<sup>2</sup> and recorded to two decimal places (e.g., 116.44).

(9) SPECIFIC VOLUME ANOMALY: The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35.0.P}$$

$\delta$  is expressed in ml/gr, and conventionally reported as  $10^5 \delta$ , to one decimal place (i.e.,  $\delta$  reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

## SPECIAL CHARACTERS

\* (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs

\* (Asterisk): this character may occur in the interpolated portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one observed depth interval. The third, and all consequent levels within that interval are preceded by the asterisk to indicate that more than two machine interpolations were carried out, utilizing the same set of interpolation parabolas.

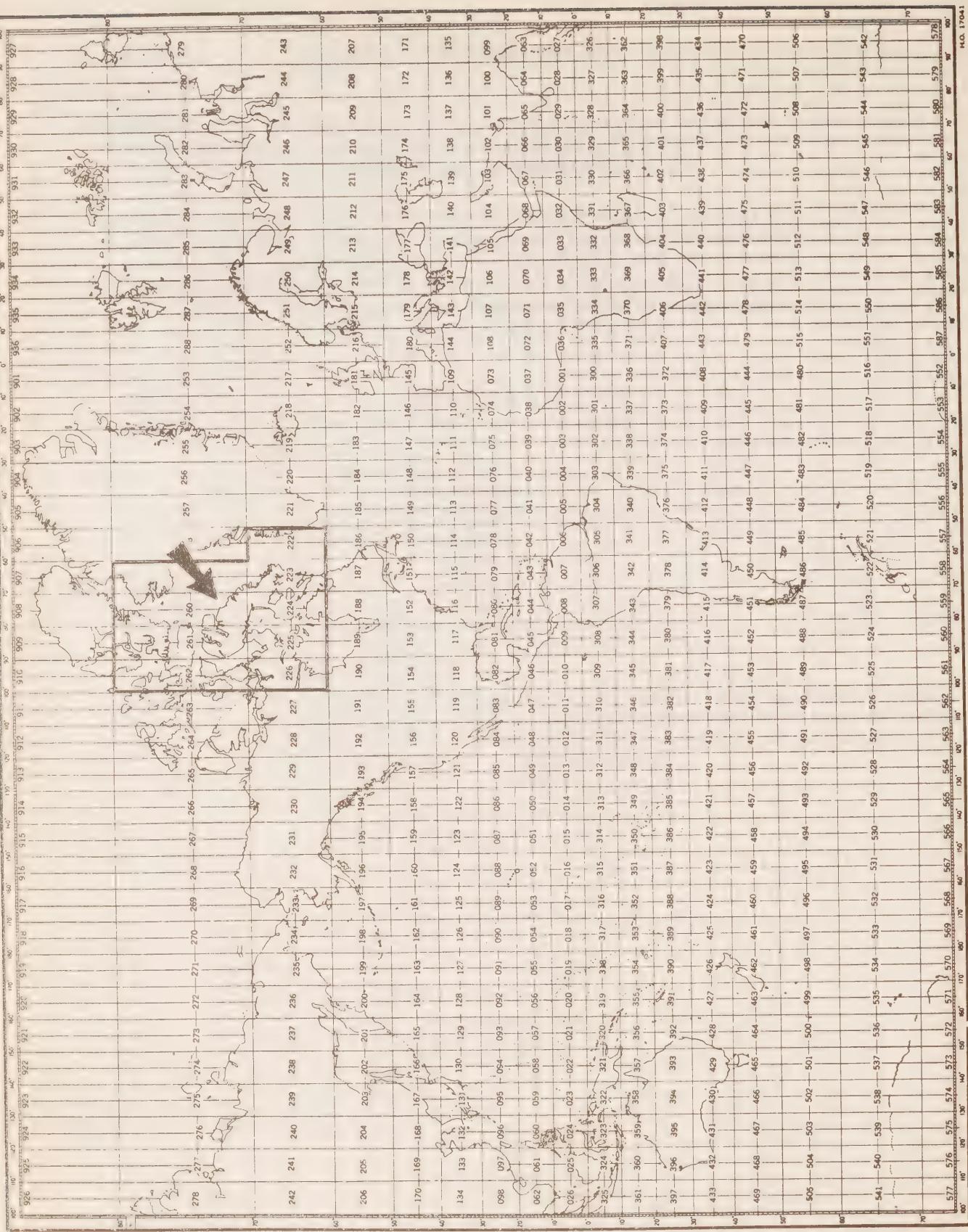
## DOUBTFUL DATA CODES

The doubtful data are reported as follows:

Code	Doubtful Data
1	depth
2	temperature
3	salinity
4	any combination of 1, 2, and 3,
5	oxygen

NOTE: Codes 1 to 4 inclusive take precedence over code 5

Location of the doubtful data code is in the "Observed Data" portion, immediately to the left of the "GMT" column.



MARSDEN SQUARE CHART

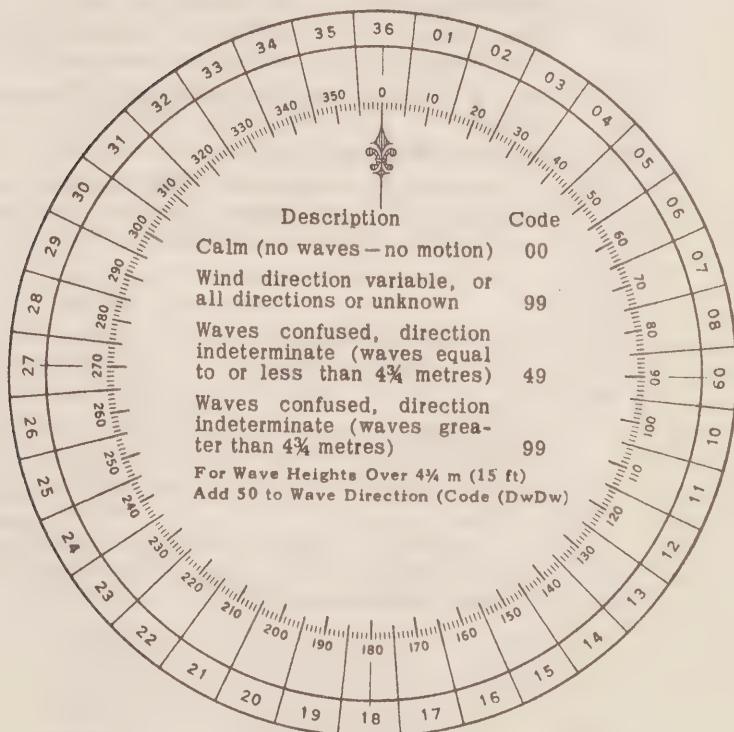
**Table 1**  
**CONVERSION**  
**MINUTES TO  $\frac{1}{10}$  HRS.**

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

**Table 2**  
**WATER COLOR CODE**  
**Based on Percentage Yellow**

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

**Table 3. DIRECTION CODE (dd)**



**NOTE:**

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

**Table 4. PERIOD OF THE WAVES (P<sub>w</sub>)**  
 (Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

**Table 5. HEIGHT OF THE WAVES (H<sub>w</sub>)**

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 =  $\frac{1}{4}$  m (1 ft) to  $\frac{3}{4}$  m (2 $\frac{1}{2}$  ft); 5 =  $\frac{2}{4}$  m (7 ft) to  $\frac{2}{4}$  m (9 ft); 9 =  $\frac{4}{4}$  m (13 $\frac{1}{2}$  ft) to  $\frac{4}{4}$  m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of  $\frac{2}{4}$  m is reported by code figure 5.

Code	Code
0 Less than $\frac{1}{4}$ m (1 ft)	0 5 m (16 ft)
1 $\frac{1}{2}$ m (1 $\frac{1}{2}$ ft)	1 $5\frac{1}{2}$ m (17 $\frac{1}{2}$ ft)
2 1 m (3 ft)	2 6 m (19 ft)
3 $1\frac{1}{2}$ m (5 ft)	Add 3 $6\frac{1}{2}$ m (21 ft)
4 2 m (6 $\frac{1}{2}$ ft)	50 4 7 m (22 $\frac{1}{2}$ ft)
5 $2\frac{1}{2}$ m (8 ft)	to 5 $7\frac{1}{2}$ m (24 ft)
6 3 m (9 $\frac{1}{2}$ ft)	Dw Dw 6 8 m (25 $\frac{1}{2}$ ft)
7 $3\frac{1}{2}$ m (11 ft)	7 $8\frac{1}{2}$ m (27 ft)
8 4 m (13 ft)	8 9 m (29 ft)
9 $4\frac{1}{2}$ m (14 ft)	9 $9\frac{1}{2}$ m (30 $\frac{1}{2}$ ft) or more
x Height not determined	

**Table 6. WIND FORCE CODE**

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests,	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER  
W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

No meteors except photometeors	Code figure ww	<p>characteristic change of the state of sky during the past hour</p> <p>00 Cloud development not ob- served or not observable</p> <p>01 Clouds generally dissolving or becoming less developed</p> <p>02 State of sky on the whole unchanged</p> <p>03 Clouds generally forming or developing</p> <p>04 Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes</p> <p>05 Haze</p> <p>06 Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation</p> <p>07 Dust or sand raised by wind at or near the sta- tion at the time of observation, but no well de- veloped dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen</p> <p>08 Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preced- ing hour or at the time of observation, but no duststorm or sandstorm</p> <p>09 Duststorm or sandstorm within sight at the time of observation, or at the station during the pre- ceding hour</p> <p>10 Mist</p> <p>11 Patches of shallow fog or ice fog at the sta- tion, whether on land or sea, not</p> <p>12 More of less deeper than about 2 metres on continuous land or 10 metres at sea</p> <p>13 Lightning visible, no thunder heard</p> <p>14 Precipitation within sight, not reaching the ground or the surface of the sea</p> <p>15 Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. esti- mated to be more than 5 km) from the station</p> <p>16 Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station</p> <p>17 Thunderstorm, but no precipitation at the time of observation</p> <p>18 Squalls at or within sight of the sta- tion during the preceding hour</p> <p>19 Funnel clouds or at the time of observation</p>	ww = 20 - 29	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation
	20	Drizzle (not freezing) or snow grains	20	Drizzle (not freezing) or snow grains
	21	Rain (not freezing)	21	Rain (not freezing)
	22	Snow	22	Snow
	23	Rain and snow or ice pellets, type (a)	23	Rain and snow or ice pellets, type (a)
	24	Freezing drizzle or freezing rain	24	Freezing drizzle or freezing rain
	25	Shower(s) of rain	25	Shower(s) of rain
	26	Shower(s) of snow, or of rain and snow	26	Shower(s) of snow, or of rain and snow
	27	Shower(s) of hail, or of rain and hail	27	Shower(s) of hail, or of rain and hail
	28	Fog or ice fog	28	Fog or ice fog
	29	Thunderstorm (with or without precipitation)	29	Thunderstorm (with or without precipitation)
	ww = 30 - 39	Duststorm, sandstorm, drifting or blowing snow	ww = 30 - 39	Duststorm, sandstorm, drifting or blowing snow
	30	Slight or mo- derate dust- storm or sand- storm	30	- has decreased during the preceding hour
	31	Slight or mo- derate dust- storm or sand- storm	31	- no appreciable change during the preceding hour
	32	Severe dust- storm or sand- storm	32	- has begun or has increased during the preceding hour
	33	Severe dust- storm or sand- storm	33	- has decreased during the preceding hour
	34	Severe dust- storm or sand- storm	34	- no appreciable change du- ring the preceding hour
	35	Severe dust- storm or sand- storm	35	- has begun or has increased during the preceding hour
	36	Slight or moderate blowing snow	36	Slight or moderate blowing snow
	37	Heavy drifting snow	37	Heavy drifting snow
	38	Slight or moderate blowing snow	38	Slight or moderate blowing snow
	39	Heavy blowing snow	39	Heavy blowing snow
	ww = 40 - 49	Fog or ice fog at the time of observation	ww = 40 - 49	Fog or ice fog at the time of observation
	40	Fog or ice fog at a distance at the time of ob- servation, but not at the station during the pre- ceding hour, the fog or ice fog extending to a level above that of the observer	40	Fog or ice fog at a distance at the time of ob- servation, but not at the station during the pre- ceding hour, the fog or ice fog extending to a level above that of the observer
	41	Fog or ice fog in patches	41	Fog or ice fog in patches
	42	Fog or ice fog, sky visible	42	Fog or ice fog, sky visible
	43	Fog or ice fog, sky invisible	43	Fog or ice fog, sky invisible
	44	Fog or ice fog, sky visible	44	Fog or ice fog, sky visible
	45	Fog or ice fog, sky invisible	45	Fog or ice fog, sky invisible
	46	Fog or ice fog, sky visible	46	Fog or ice fog, sky visible
	47	Fog or ice fog, sky invisible	47	Fog or ice fog, sky invisible
	48	Fog, depositing rime, sky visible	48	Fog, depositing rime, sky visible
	49	Fog, depositing rime, sky invisible	49	Fog, depositing rime, sky invisible

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

### PRECIPITATION ON STATION AT TIME OF OBSERVATION

**ww = 50 - 59** Drizzle

50	Drizzle, not freezing, intermittent	slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	moderate at time of ob- servation
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	heavy (dense) at time of obser- vation
55	Drizzle, not freezing, continuous	
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

**ww = 60 - 69** Rain

60	Rain, not freezing, intermittent	slight at time of observa- tion
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	moderate at time of obser- vation
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	heavy at time of observa- tion
65	Rain, not freezing, continuous	
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

**70 - 79** Solid precipitation not in showers

70	Intermittent fall of snow flakes	slight at time of ob- servation
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	moderate at time of obser- vation
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	heavy at time of obser- vation
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

**ww = 80 - 99** Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pel- lets or ice pellets, type (b), with or without rain	- slight
88	or rain and snow mixed	- moderate or heavy
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	- slight
90		- moderate or heavy
91	Slight rain at time of obser- vation	
92	Moderate or heavy rain at time of observation	thunderstorm during the preceding hour but not at time of obser- vation
93	Slight snow, or rain and snow mixed or hail at time of observation	
94	Moderate or heavy snow, or rain and snow mixed or hail at time of obser- vation	
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of obser- vation	
96	Thunderstorm, slight or moderate, with hail at time of observation	
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of obser- vation	thunderstorm at time of observation
98	Thunderstorm, combined with duststorm or sand- storm at time of obser- vation	
99	Thunderstorm, heavy, with hail at time of obser- vation	

**Table 8. CLOUD TYPE CODE**

Code	Cloud Type	Code	Cloud Type
0	Cirrus .....	C1	Nimbostratus .....
1	Cirrocumulus .....	Cc	Stratocumulus .....
2	Cirrostratus .....	Cs	Stratus .....
3	Altocumulus .....	Ac	Cumulus .....
4	Altostratus .....	As	Cumulonimbus .....
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

**Table 9. CLOUD AMOUNT CODE**

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta =  $\frac{1}{8}$  of the sky covered**Table 10. VISIBILITY**

Code	Estimate of hor. Visibility	
90	Less than 50 metres	(less than 55 yards)
91	50–200 metres	(approx. 55–220 yards)
92	200–500 metres	(approx. 220–550 yards)
93	500–1,000 metres	(approx. 550 yards– $\frac{5}{6}$ n.m.)
94	1–2 km	(approx. $\frac{5}{6}$ –1 n.m.)
95	2–4 km	(approx. 1–2 n.m.)
96	4–10 km	(approx. 2–6 n.m.)
97	10–20 km	(approx. 6–12 n.m.)
98	20–50 km	(approx. 12–30 n.m.)
99	50 km or more	(30 n.m. or more)

Note: n.m. = nautical mile

### SECTION III

Serial oceanographic data



M.V. "THETA"

Serial Data



C-REF-NO 329 YR 1960 DEPTH 684 WAVES 1 00XO AIR T 02.5 VIS  
 CONS. NO 001 MONTH 8 MXSAMPD 06 WAVES 2 XO WET B 02.5 STN 002  
 LAT 74-28 N DAY 22 NO.DPTH 14 WND-DIR CALM WW-CODE 10  
 LON 82-48 W HR 00.6 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT HW 11

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	013	29036		2327	14470
	0010	0124	30013		2405	14482
	0020	0099	30746		2465	14482
	0030	-0043	31587		2539	14431
	0050	-0139	32688		2631	14404
	0075	-0139	33026		2659	14413
	0100	-0127	33356		2685	14428
	0150	-0130	33726		2715	14440
	0200	-0146	33847		2725	14442
	0250	-0090	33972		2734	14478
	0300	-0022	34123		2743	14520
	0400	0016	34332		2758	14557
	0500	0058	34450		2765	14594
	0600	0039	34461		2767	14603

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0130	29036		2327	14470	0000	00000	4617
0010	0124	30013		2405	14482	0043	00002	3867
0020	0099	30746		2465	14482	0079	00007	3294
0030	-0043	31587		2539	14431	0108	00015	2589
0050	-0139	32688		2631	14404	0151	00032	1714
0075	-0139	33026		2659	14413	0191	00057	1453
0100	-0127	33356		2685	14428	0225	00086	1202
0125	-0125	3358 C		2703	14436	0253	00119	1029
0150	-0130	33726		2715	14440	0277	00153	0915
0175	-0142	3380 E		2722	14439	0300	00190	0851
0200	-0146	33847		2725	14442	0321	00230	0814
0225	-0123	33908		2730	14458	0341	00274	0774
0250	-0090	33972		2734	14478	0360	00320	0737
0300	-0022	34123		2743	14520	0395	00419	0653
0400	0016	34332		2758	14557	0454	00627	0515
0500	0058	34450		2765	14594	0503	00852	0454
0600	0039	34461		2767	14603	0547	01105	0432

C-REF-NO 329 YR 1960 DEPTH 786 WAVES 1 00X0 AIR T 00.0 VIS  
 CONS. NO 002 MONTH 8 MXSAMPO 07 WAVES 2 2442 WET B 00.0 STN 005  
 LAT 74-15 N DAY 22 NO.DPTH 15 WND-DIR CALM WW-CODE 12  
 LON 82-47 W HR 03.8 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT HW 02

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000	016	30378		2433	14502
0010	0195	30399		2432	14519
0020	0194	30415		2433	14521
0029	0209	30742		2458	14533
0049	0228	31091		2485	14550
0073	-0133	32159		2588	14403
0097	-0148	32834		2643	14410
0145	-0114	33433		2691	14442
0192	-0125	33704		2713	14449
0239	-0162	33833		2725	14441
0286	-0113	33917		2730	14473
0382	0028	34243		2750	14558
0477	0117	34449		2761	14617
0574	0061	34471		2767	14608
0673	0001	34460		2769	14597

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0160	30378		2433	14502	0000	00000	3609
0010	0195	30399		2432	14519	0036	00002	3614
0020	0194	30415		2433	14521	0073	00007	3601
0030	0214	3076 D		2460	14536	0107	00016	3352
0050	0214 B	3113 D		2489	14544	0172	00042	3069
0075	-0141 B	32228		2594	14401	0237	00082	2065
0100	-0146	3289 C		2648	14412	0282	00122	1553
0125	-0131 B	3326 I		2678	14429	0318	00163	1269
0150	-0114	3347 B		2694	14444	0348	00205	1114
0175	-0117	3363 C		2707	14449	0374	00249	0989
0200	-0133	33733		2716	14446	0398	00295	0906
0225	-0154 B	3380 B		2722	14442	0420	00343	0842
0250	-0155	3385 B		2726	14446	0441	00393	0804
0300	-0093	3396 D		2733	14485	0480	00503	0742
0400	0052	34293		2753	14573	0546	00736	0567
0500	0111 B	3446 C		2763	14618	0599	00979	0481
0600	0071 E	3450 G		2768	14617	0645	01237	0427

C-REF-NO 329 YR 1960 DEPTH 695 WAVES 1 X2 AIR T 01.2 VIS  
 CONS. NO 003 MONTH 8 MXSAMPD 04 WAVES 2 2542 WET B 00.0 STN 008  
 LAT 74-01 N DAY 22 NO.DPTH 12 WND-DIR WW-CODE 12  
 LON 82-47 W HR 06.4 W-COLOR WND-FCE 02 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT HW 05

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		016	29005		2323	14483
0010		0149	29833		2390	14491
0020		0154	30865		2472	14509
0030		0341	31703		2525	14604
0049		-0047	32175		2587	14440
0074		-0144	32589		2624	14405
0098		-0142	32992		2656	14415
0146		-0130	33427		2691	14435
0191		-0133	33784		2720	14446
0239		-0106	33932		2731	14469
0284		-0038	34123		2744	14510
0376		-0022	34238		2752	14534

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0160	29005		2323	14483	0000	00000	4656
0010	0149	29833		2390	14491	0044	00002	4018
0020	0154	30865		2472	14509	0080	00007	3234
0030	0341	31703		2525	14604	0110	00015	2734
0050	-0056	32194		2589	14436	0159	00034	2118
0075	-0145	32607		2625	14404	0208	00065	1773
0100	-0141	3302 B		2658	14416	0248	00101	1458
0125	-0135	3327 I		2678	14427	0283	00140	1263
0150	-0131	33464		2694	14436	0313	00183	1115
0175	-0133	3367 C		2711	14442	0339	00226	0954
0200	-0131	3382 D		2723	14449	0361	00269	0841
0225	-0118	3390 E		2729	14460	0382	00314	0783
0250	-0089	3398 B		2734	14479	0401	00360	0731
0300	-0050 E	3412 I		2744	14507	0436	00457	0638

C-REF-NO 329 YR 1960 DEPTH 512 WAVES 1 00XO AIR T -01.2 VIS  
 CONS. NO 004 MONTH 8 MXSAMPD 05 WAVES 2 2442 WET B -01.2 STN 011  
 LAT 73-48 N DAY 22 NO.DPTH 13 WND-DIR CALM WW-CODE 10  
 LON 82-47 W HR 09.8 W-COLOR WND-FCE 00 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARD 1012. CLD-AMT HW 08

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-003	31857		2561	14435	
0010	-0046	31842		2560	14429	
0020	-0050	31854		2561	14429	
0030	-0094	32013		2576	14413	
0050	-0142	32350		2604	14398	
0075	-0144	32648		2628	14406	
0100	-0141	32842		2644	14414	
0150	-0128	33064		2662	14431	
0200	-0105	33409		2689	14455	
0250	-0110	33779		2719	14466	
0300	0012	34257		2752	14538	
0400	0036	34410		2763	14567	
0500	0012	34445		2767	14573	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0030	31857		2561	14435	0000	00000.	2389
0010	-0046	31842		2560	14429	0024	00001	2394
0020	-0050	31854		2561	14429	0048	00005	2383
0030	-0094	32013		2576	14413	0071	00011	2246
0050	-0142	32350		2604	14398	0114	00028	1973
0075	-0144	32648		2628	14405	0161	00058	1741
0100	-0141	32842		2644	14414	0203	00095	1591
0125	-0136	3296 G		2653	14422	0242	00140	1501
0150	-0128	33064		2662	14431	0278	00192	1422
0175	-0115	3323 B		2674	14444	0313	00249	1299
0200	-0105	33409		2689	14455	0344	00308	1163
0225	-0114 8	3359 B		2703	14458	0371	00368	1023
0250	-0110	33779		2719	14466	0395	00426	0876
0300	0012	34257		2752	14538	0432	00527	0570
0400	0036	34410		2763	14567	0484	00713	0469
0500	0012	34445		2767	14573	0529	00922	0427

C-REF-NO 329 YR 1960 DEPTH 655 WAVES 1 08X3 AIR T 01.1 VIS  
 CONS. NO 005 MONTH 9 MXSAMPD 06 WAVES 2 0946 WET B -01.7 STN 032  
 LAT 74-28 N DAY 23 NO.DPTH 14 WND-DIR 090 WW-CODE 02  
 LON 81-36 W HR 12.6 W-COLOR WND-FCE 05 CLD-TPE 7  
 MARSD SQ 261 W-TRNSP BARO 1010. CLD-AMT 9 HW 09

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	000	31295		2514	14441	
0010	0014	31279		2512	14449	
0020	0015	31287		2513	14452	
0030	0014	31303		2514	14453	
0050	0015	31351		2518	14457	
0075	-0098	32016		2576	14418	
0100	-0132	32744		2636	14417	
0150	-0105	33418		2689	14447	
0200	-0128	33741		2716	14449	
0250	-0131	33845		2725	14457	
0300	-0072	34064		2740	14496	
0400	-0012	34239		2752	14543	
0500	0104	34434		2761	14615	
0600	0053	34463		2766	14609	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0000	31295		2514	14441	0000	00000	2831
0010	0014	31279		2512	14449	0029	00001	2848
0020	0015	31287		2513	14452	0057	00006	2842
0030	0014	31303		2514	14453	0086	00013	2829
0050	0015	31351		2518	14457	0142	00036	2791
0075	-0098	32016		2576	14418	0205	00076	2239
0100	-0132	32744		2636	14417	0255	00119	1669
0125	-0123 C	3317 I		2670	14431	0293	00162	1345
0150	-0105	33418		2689	14447	0324	00207	1159
0175	-0115	3362 C		2706	14449	0351	00252	1003
0200	-0128	33741		2716	14449	0375	00298	0901
0225	-0135	3380 G		2721	14451	0398	00346	0853
0250	-0131	33845		2725	14457	0419	00397	0818
0300	-0072	34064		2740	14496	0456	00503	0673
0400	-0012	34239		2752	14543	0519	00725	0569
0500	0104	34434		2761	14615	0573	00973	0499
0600	0053	34463		2766	14609	0620	01240	0441

C-REF-NO 329 YR 1960 DEPTH 805 WAVES 1 08X3 AIR T 00.0 VIS  
 CONS. NO 006 MONTH 9 MXSAMPD 07 WAVES 2 0826 WET B -01.1 STN 035  
 LAT 74-15 N DAY 23 NO.DPTH 15 WND-DIR 070 WW-CODE 02  
 LON 81-32 W HR 16.0 W-COLOR WND-FCE 05 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1010. CLD-AMT 8 HW 00

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
	0000	004	31778		2551	14467
	0010	0014	31582		2537	14454
	0020	0014	31612		2539	14456
	0030	0014	31623		2540	14457
	0050	0013	31688		2545	14461
	0075	0004	32474		2609	14472
	0100	-0014	32880		2643	14474
	0150	-0088	33413		2688	14455
	0200	-0120	33708		2713	14452
	0250	-0138	33831		2724	14454
	0300	-0098	33962		2733	14483
	0400	0083	34317		2753	14587
	0500	0113	34432		2760	14619
	0600	0107	34475		2764	14633
	0700	0026	34503		2771	14614

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0040	31778		2551	14467	0000	00000	2478
0010	0014	31582		2537	14454	0026	00001	2616
0020	0014	31612		2539	14456	0052	00005	2593
0030	0014	31623		2540	14457	0078	00012	2584
0050	0013	31688		2545	14461	0129	00033	2533
0075	0004	32474		2609	14472	0185	00068	1927
0100	-0014	32880		2643	14473	0230	00108	1609
0125	-0050 B	3319 C		2669	14465	0267	00150	1359
0150	-0088	33413		2688	14455	0299	00195	1169
0175	-0108	3359 B		2703	14452	0327	00241	1028
0200	-0120	33708		2713	14452	0352	00288	0929
0225	-0134	3378 D		2720	14451	0374	00338	0868
0250	-0138	33831		2724	14454	0396	00390	0826
0300	-0098	33962		2733	14483	0435	00501	0739
0400	0083	34317		2753	14587	0501	00734	0570
0500	0113	34432		2760	14619	0556	00984	0507
0600	0107	34475		2764	14633	0605	01263	0472
0700	0026	34503		2771	14614	0649	01553	0392

C-REF-NO 329 YR 1960 DEPTH 711 WAVES 1 08X4 AIR T -01.9 VIS  
 CONS. NO 007 MONTH 9 MXSAMPD 06 WAVES 2 0886 WET B -02.8 STN 038  
 LAT 74-01 N DAY 23 NO.DPTH 14 WND-DIR 080 WW-CODE 02  
 LON 81-32 W HR 19.4 W-COLOR WND-FCE 06 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1010. CLD-AMT 9 HW 03

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
	0000	003	31321		2515	14456
	0010	0022	31321		2515	14454
	0020	0022	31309		2514	14455
	0030	0022	31337		2517	14457
	0050	0028	31557		2534	14466
	0074	-0102	32168		2588	14418
	0098	-0132	32542		2619	14413
	0147	-0129	33033		2659	14430
	0196	-0100	33574		2702	14459
	0246	-0139	33840		2725	14453
	0295	-0121	33897		2729	14470
	0394	0019	34218		2749	14556
	0493	0071	34398		2760	14598
	0592	0053	34457		2766	14608

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0030	31321		2515	14456	0000	00000	2823
0010	0022	31321		2515	14454	0028	00001	2819
0020	0022	31309		2514	14455	0057	00006	2828
0030	0022	31337		2517	14457	0085	00013	2806
0050	0028	31557		2534	14466	0140	00035	2640
0075	-0104	32187		2590	14418	0200	00073	2106
0100	-0133	32578		2621	14414	0249	00116	1806
0125	-0137	32831		2643	14419	0292	00166	1598
0150	-0127	33078		2662	14432	0330	00219	1418
0175	-0110	3336G		2685	14448	0363	00274	1203
0200	-0103	33604		2704	14459	0391	00327	1014
0225	-0122B	33768		2718	14456	0415	00379	0888
0250	-0139	33858		2725	14454	0436	00432	0813
0300	-0115	33918		2730	14474	0476	00544	0771
0400	0024	34233		2750	14560	0545	00788	0595
0500	0075	34410		2761	14602	0600	01040	0496
0600	0048	34456		2766	14607	0648	01307	0443

C-REF-NO 329 YR 1960 DEPTH 637 WAVES 1 06X4 AIR T -01.4 VIS  
 CONS. NO 008 MONTH 9 MXSAMPD 06 WAVES 2 0626 WET B -02.2 STN 041  
 LAT 73-48 N DAY 23 NO.DPTH 14 WND-DIR 060 WW-CODE 70  
 LON 81-34 W HR 22.6 W-COLOR WND-FCE 05 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT 9 HW 07

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	003	31642		2541	14460
	0010	0013	31529		2533	14452
	0020	0022	31682		2544	14460
	0030	0022	31657		2542	14462
	0050	0027	31711		2547	14468
	0075	-0146	32390		2607	14401
	0100	0010	32812		2636	14484
	0150	-0038	33251		2673	14476
	0200	-0122	33688		2712	14451
	0250	-0157	33810		2723	14445
	0300	-0097	33936		2731	14483
	0400	0021	34274		2753	14559
	0500	0040	34415		2763	14586
	0600	0015	34454		2768	14592

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0030	31642		2541	14460	0000	00000	2578
0010	0013	31529		2533	14452	0026	00001	2656
0020	0022	31682		2544	14460	0052	00005	2543
0030	0022	31657		2542	14462	0078	00012	2561
0050	0027	31711		2547	14468	0129	00033	2522
0075	-0146	32390		2607	14401	0185	00068	1939
0100	0010	32812		2636	14484	0231	00108	1672
0125	0018 F	3307 I		2656	14495	0271	00154	1482
0150	-0038	33251		2673	14476	0306	00203	1313
0175	-0081	3349 G		2694	14463	0336	00254	1112
0200	-0122	33688		2712	14451	0362	00304	0944
0225	-0149	3377 G		2719	14444	0385	00353	0872
0250	-0157	33810		2723	14445	0407	00406	0836
0300	-0097	33936		2731	14483	0447	00519	0759
0400	0021	34274		2753	14559	0514	00754	0562
0500	0040	34415		2763	14586	0566	00992	0468
0600	0015	34454		2768	14592	0611	01245	0421

C-REF-NO 329 YR 1960 DEPTH 483 WAVES 1 06X4 AIR T -01.1 VIS  
 CONS. NO 009 MONTH 9 MXSAMPD 04 WAVES 2 0646 WET B STN 044  
 LAT 73-48 N DAY 24 NO.DPTH 12 WND-DIR 060 WW-CODE 70  
 LON 82-45 W HR 02.1 W-COLOR WND-FCE 04 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT 9 HW 10

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
0000	-002	31315		2517	14433	
0010	-0006	31320		2517	14441	
0020	0002	31322		2516	14446	
0030	0091	31910		2559	14496	
0050	-0092	32104		2583	14418	
0075	-0145	32417		2610	14402	
0100	-0144	32652		2629	14410	
0150	-0120	33127		2666	14436	
0200	-0119	33636		2708	14452	
0250	-0079	33942		2731	14483	
0300	-0031	34123		2743	14516	
0400	0034	34358		2759	14566	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0020	31315		2517	14433	0000	00000	2808
0010	-0006	31320		2517	14441	0028	00001.	2808
0020	0002	31322		2516	14446	0056	00006	2810
0030	0091	31910		2559	14496	0083	00012	2402
0050	-0092	32104		2583	14418	0129	00031	2175
0075	-0145	32417		2610	14402	0180	00064	1918
0100	-0144	32652		2629	14410	0226	00105	1736
0125	-0132	32887		2647	14423	0268	00152	1558
0150	-0120	33127		2666	14436	0305	00204	1376
0175	-0121	3339 E		2688	14444	0337	00257	1172
0200	-0119	33636		2708	14452	0364	00309	0984
0225	-0102	3381 8		2721	14466	0387	00360	0857
0250	-0079	33942		2731	14483	0408	00410	0765
0300	-0031	34123		2743	14516	0443	00510	0648
0400	0034	34358		2759	14566	0502	00716	0507

C-REF-NO 329 YR 1960 DEPTH 679 WAVES 1 06X3 AIR T -01.7 VIS  
 CONS. NO 010 MONTH 9 MXSAMPD 06 WAVES 2 0682 WET 8 STN 047  
 LAT 74-01 N DAY 24 NO.DPTH 14 WND-DIR 060 WW-CODE 70  
 LON 82-45 W HR 04.6 W-COLOR WND-FCE 03 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARD 1012. CLD-AMT 9 HW 00

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-004	30120		2421	14407	
0010	-0050	30013		2413	14402	
0020	-0048	30013		2413	14405	
0030	-0046	30048		2416	14408	
0049	0005	31096		2498	14449	
0073	-0136	32143		2587	14402	
0098	-0146	32429		2611	14405	
0147	0013	33011		2652	14495	
0196	-0108	33450		2692	14454	
0245	-0089	33883		2726	14477	
0294	-0006	34198		2748	14528	
0393	0058	34395		2761	14576	
0492	0037	34456		2767	14584	
0592	0007	34447		2768	14587	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0040	30120		2421	14407	0000	00000	3717
0010	-0050	30013		2413	14402	0038	00002	3796
0020	-0048	30013		2413	14405	0076	00008	3795
0030	-0046	30048		2416	14408	0114	00018	3768
0050	0000	3115 B		2503	14448	0181	00044	2938
0075	-0141	3218 E		2590	14401	0245	00084	2101
0100	-0139	32454		2612	14409	0295	00128	1890
0125	-0056 G	3276 D		2634	14457	0340	00180	1684
0150	0008 B	33040		2654	14494	0380	00236	1495
0175	-0048 F	3327 C		2675	14476	0415	00294	1293
0200	-0110	33488		2695	14454	0445	00352	1101
0225	-0109	3371 B		2714	14462	0471	00407	0927
0250	-0081	33921		2729	14482	0492	00460	0779
0300	0001	3422 B		2750	14532	0527	00556	0592
0400	0058	34403		2761	14577	0582	00750	0489
0500	0048 C	3447 D		2767	14590	0628	00963	0432
0600	0002	34441		2767	14585	0671	01207	0422

C-REF-NO 329 YR 1960 DEPTH 768 WAVES 1 09X3 AIR T -00.6 VIS  
 CONS. NO 011 MONTH 9 MXSAMPD 07 WAVES 2 0982 WET B STN 050  
 LAT 74-15 N DAY 24 NO.DPTH 15 WND-DIR 090 WW-CODE 02  
 LON 82-45 W HR 07.0 W-COLOR WND-FCE 01 CLD-TPE  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT 9 HW 03

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
0000	-001	30861		2480	14431	
0010	-0008	30972		2489	14435	
0020	0003	31016		2492	14442	
0030	0012	31055		2494	14449	
0050	0048	32021		2570	14482	
0075	-0138	32548		2620	14407	
0100	-0110	32839		2643	14428	
0150	-0106	33295		2680	14445	
0200	-0118	33645		2708	14452	
0250	-0150	33819		2723	14448	
0300	-0087	33977		2734	14488	
0400	0002	34206		2749	14549	
0500	0009	34345		2759	14571	
0600	0066	34459		2765	14615	
0700	0003	34442		2768	14603	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0010	30861		2480	14431	0000	00000	3159
0010	-0008	30972		2489	14435	0031	00002	3074
0020	0003	31016		2492	14442	0062	00006	3044
0030	0012	31055		2494	14449	0093	00014	3017
0050	0048	32021		2570	14482	0146	00035	2295
0075	-0138	32548		2620	14407	0198	00068	1820
0100	-0110	32839		2643	14428	0241	00106	1603
0125	-0103	3308 B		2662	14439	0279	00150	1416
0150	-0106	33295		2680	14445	0313	00197	1252
0175	-0110	3349 B		2695	14450	0342	00246	1102
0200	-0118	33645		2708	14452	0368	00296	0978
0225	-0139 B	3374 C		2717	14448	0392	00348	0894
0250	-0150	33819		2723	14448	0414	00401	0831
0300	-0087	33977		2734	14488	0453	00511	0732
0400	0002	34206		2749	14549	0521	00750	0602
0500	0009	34345		2759	14571	0576	01005	0500
0600	0066	34459		2765	14615	0624	01276	0453
0700	0003	34442		2768	14603	0669	01571	0422

C-REF-NO 329 YR 1960 DEPTH 702 WAVES 1 06X2 AIR T -02.8 VIS  
 CONS. NO 012 MONTH 9 MXSAMPD 06 WAVES 2 0642 WET B STN 053  
 LAT 74-28 N DAY 24 NO.DPTH 14 WND-DIR 040 WW-CODE  
 LON 82-45 W HR 09.5 W-COLOR WND-FCE 02 CLD-TPE 7  
 MARSD SQ 261 W-TRNSP BARO 1012. CLD-AMT 8 HW 05

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	002	31182		2504	14449	
0010	0007	31187		2505	14445	
0020	0038	31275		2511	14462	
0030	0054	31336		2515	14472	
0050	0052	31855		2557	14481	
0075	-0109	31830		2561	14411	
0100	-0046	32975		2652	14460	
0150	-0106	33479		2694	14447	
0200	-0138	33795		2721	14445	
0250	-0088	33949		2732	14479	
0300	-0034	34119		2743	14515	
0400	-0018	34274		2755	14541	
0500	0012	34353		2760	14572	
0600	0046	34425		2764	14605	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0020	31182		2504	14449	0000	00000	2925
0010	0007	31187		2505	14445	0029	00002	2915
0020	0038	31275		2511	14462	0058	00006	2861
0030	0054	31336		2515	14472	0087	00013	2821
0050	0052	31855		2557	14481	0140	00034	2424
0075	-0109	31830		2561	14410	0200	00073	2378
0100	-0046	32975		2652	14460	0249	00116	1522
0125	-0062	3339 D	I	2685	14462	0284	00155	1199
0150	-0106	33479		2694	14447	0313	00196	1112
0175	-0129	33659		2710	14443	0339	00239	0965
0200	-0138	33795		2721	14445	0362	00283	0856
0225	-0118	3388 D		2727	14460	0383	00329	0796
0250	-0088	33949		2732	14479	0402	00376	0755
0300	-0034	34119		2743	14515	0438	00476	0650
0400	-0018	34274		2755	14541	0498	00689	0539
0500	0012	34353		2760	14572	0550	00929	0496
0600	0046	34425		2764	14605	0599	01203	0464

C-REF-NO 329 YR 1960 DEPTH 389 WAVES 1 36X1 AIR T -02.5 VIS  
 CONS. NO 013 MONTH 9 MXSAMPD 03 WAVES 2 X0 WET B STN 055  
 LAT 74-28 N DAY 24 NO.DPTH 11 WND-DIR 360 WW-CODE 02  
 LON 84-00 W HR 12.5 W-COLOR WND-FCE 01 CLD-TPE 7  
 MARSD SQ 261 W-TRNSP BARO 1013. CLD-AMT 8 HW 08

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-006	30544		2456	14403
	0010	-0066				
	0020	-0013	31254		2512	14438
	0040	-0110	32130		2585	14408
	0065	-0146	32488		2615	14401
	0090	-0144	32791		2640	14410
	0140	-0130	33200		2673	14431
	0190	-0130	33758		2718	14447
	0240	-0130	33991		2737	14458
	0290	-0076	33998		2735	14492
	0340	-0018	34148		2745	14529

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0060	30544		2456	14403	0000	00000	3386
0010	-0066	3098 I		2492	14408	0032	00002	3045
0020	-0013	31254		2512	14438	0062	00006.	2856
0030	-0048 E	3171 I		2550	14430	0089	00013	2490
0050	-0132	3233 I		2602	14402	0134	00031	1994
0075	-0148	32616		2626	14403	0181	00061	1765
0100	-0141	3288 F		2647	14414	0223	00098	1564
0125	-0134	3308 G		2663	14425	0261	00141	1407
0150	-0129	3332 F		2682	14434	0294	00188	1226
0175	-0129	3360 H		2705	14442	0322	00234	1010
0200	-0132	3383 B		2723	14448	0345	00279	0834
0225	-0133	3395 B		2733	14454	0365	00322	0738
0250	-0122	3400 E		2737	14464	0383	00366	0706
0300	-0073 B	3408 I		2742	14496	0418	00463	0660

C-REF-NO 329 YR 1960 DEPTH 658 WAVES 1 03X2 AIR T -01.1 VIS  
 CONS. NO 014 MONTH 9 MXSAMPD 06 WAVES 2 0942 WET B STN 058  
 LAT 74-15 N DAY 24 NO.DPTH 14 WND-DIR 030 WW-CODE 02  
 LON 83-59 W HR 15.6 W-COLOR WND-FCE 01 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1013. CLD-AMT 8 HW 11

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-001	30820		2476	14430
	0010	-0016	30808		2476	14429
	0019	0033	31111		2498	14457
	0029	0077	31744		2547	14488
	0048	0120	32299		2589	14518
	0072	-0037	32675		2627	14455
	0096	-0039	32968		2651	14463
	0146	-0081	33215		2672	14455
	0195	-0096	33454		2692	14459
	0244	-0129	33730		2715	14456
	0294	-0132	33874		2727	14465
	0394	-0015	34182		2747	14540
	0494	0044	34355		2758	14586
	0594	0047	34440		2765	14605

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0010	30820		2476	14430	0000	00000	3191
0010	-0016	30808		2476	14429	0032	00002	3197
0020	0038	3117 D		2503	14461	0063	00006	2939
0030	0082	3179 C		2550	14491	0090	00013	2492
0050	0108 B	3234 B		2593	14514	0136	00032	2085
0075	-0041	32717		2631	14455	0184	00062	1723
0100	-0042	3300 C		2653	14462	0225	00098	1507
0125	-0062	3314 I		2666	14459	0261	00140	1388
0150	-0082	33234		2674	14455	0295	00188	1308
0175	-0090	33354		2684	14457	0327	00240	1211
0200	-0100	3348 B		2695	14459	0356	00297	1107
0225	-0117	3363 C		2707	14457	0383	00354	0989
0250	-0131	3375 B		2717	14456	0406	00412	0890
0300	-0126	33894		2729	14468	0449	00530	0779
0400	-0010	34196		2748	14543	0518	00776	0603
0500	0046	3437 C		2759	14588	0574	01033	0505
0600	0045	34441		2765	14605	0623	01305	0452

C-REF-NO 329 YR 1960 DEPTH 618 WAVES 1 02X2 AIR T -01.4 VIS  
 CONS. NO 015 MONTH 9 MXSAMPD 05 WAVES 2 42 WET B -01.7 STN 061  
 LAT 74-01 N DAY 24 NO.DPTH 13 WND-DIR 020 WW-CODE 02  
 LON 83-58 W HR 19.3 W-COLOR WND-FCE 01 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1013. CLD-AMT 8 HW 02

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-007	30404		2445	14397
	0010	-0058	30846		2480	14410
	0020	-0039				
	0030	-0049	31484		2531	14426
	0050	-0140				
	0075	-0130	33197		2672	14420
	0100	-0120	33410		2689	14432
	0150	-0121	33747		2717	14444
	0200	-0124	33872		2727	14453
	0250	-0063	34020		2737	14492
	0300	-0006	34177		2747	14528
	0400	0048	34369		2759	14572
	0500	0042	34442		2765	14587

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0070	30404		2445	14397	0000	00000.	3491
0010	-0058	30846		2480	14410	0033	00002	3154
0020	-0039	3118 H		2507	14425	0064	00006	2902
0030	-0049	31484		2531	14426	0092	00013	2666
0050	-0140	3233 I		2602	14399	0139	00032	1991
0075	-0130	33197		2672	14420	0180	00058	1324
0100	-0120	33410		2689	14432	0212	00085	1163
0125	-0119	3360 B		2705	14439	0239	00117	1017
0150	-0121	33747		2717	14444	0263	00151	0902
0175	-0126	3382 E		2723	14447	0285	00187	0842
0200	-0124	33872		2727	14453	0306	00227	0802
0225	-0097	33944		2732	14470	0326	00270	0756
0250	-0063	34020		2737	14492	0344	00315	0712
0300	-0006	34177		2747	14528	0378	00410	0621
0400	0048	34369		2759	14572	0435	00612	0507
0500	0042	34442		2765	14587	0483	00833	0449

C-REF-NO 329 YR 1960 DEPTH 228 WAVES 1 00X0 AIR T -01.7 VIS  
 CONS. NO 016 MONTH 9 MXSAMPD 02 WAVES 2 0942 WET B STN 064  
 LAT 73-48 N DAY 24 NO.DPTH 9 WND-DIR CALM WW-CUDE 02  
 LON 83-57 W HR 21.8 W-COLOR WND-FCE 00 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARD 1014. CLD-AMT 8 HW 05

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-007	29532		2375	14384
	0010	-0073	29663		2385	14387
	0020	-0034	31114		2501	14427
	0029	-0085	31924		2568	14416
	0049	-0137	32392		2607	14401
	0073	-0143	32725		2634	14407
	0098	-0143	32893		2648	14413
	0147	-0126	33313		2682	14435
	0196	-0123	33703		2713	14450

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0070	29532		2375	14384	0000	00000	4161
0010	-0073	29663		2385	14387	0041	00002	4059
0020	-0034	31114		2501	14427	0077	00007	2955
0030	-0089	3197 G		2572	14414	0103	00014	2279
0050	-0138	32410		2609	14401	0145	00031	1928
0075	-0143	3274 B		2636	14407	0190	00059	1670
0100	-0142	32909		2649	14414	0231	00095	1540
0125	-0134	3312 C		2666	14425	0268	00138	1380
0150	-0131 B	3332 G		2682	14433	0301	00184	1229
0175	-0127	3352 E		2699	14442	0330	00232	1070
*0200	-0122	3374 B		2716	14452	0354	00280	0905

C.C.G.S. "LABRADOR"

Serial Data



C-REF-NO 340 YR 1960 DEPTH 187 WAVES 1 XX AIR T 01.1 VIS 98  
 CONS. NO 001 MONTH 8 MXSAMPD 01 WAVES 2 0682 WET B STN 001  
 LAT 74-110N DAY 29 NO.DPTH 7 WND-DIR 060 WW-CODE 02  
 LON 94-300W HR 06.3 W-COLOR WND-SPD 11 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1007. CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0160	26760		2143	14452
0010		0059	28283		2270	14429
0020		0024	29123		2339	14426
0030		-0067	30636		2464	14406
0050		-0124	31751		2555	14398
0075		-0139	32251		2596	14402
0100		-0121	32588		2623	14420

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0160	26760		2143	14452	0000	00000	6372
0010	0059	28283		2270	14429	0058	00003	5160
0020	0024	29123		2339	14426	0106	00010	4502
0030	-0067	30636		2464	14406	0146	00020	3311
0050	-0124	31751		2555	14398	0203	00042	2437
0075	-0139	32251		2596	14402	0260	00078	2047
0100	-0121	32588		2623	14420	0308	00121	1792

C-REF-NO 340 YR 1960 DEPTH 183 WAVES 1 XX AIR T 01.1 VIS 98  
 CONS. NO 002 MONTH 8 MXSAMPD 01 WAVES 2 0682 WET B STN 002  
 LAT 74-150N DAY 30 NO.DPTH 7 WND-DIR 060 WW-CODE 02  
 LON 94-300W HR 07.1 W-COLOR WND-SPD 11 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1007. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0150	26310		2108	14442
0010		0075	28077		2253	14433
0020		-0058	29428		2366	14392
0030		-0096	31004		2494	14398
0050		-0129	31958		2572	14399
0075		-0140	32420		2610	14404
0100		-0135	32661		2629	14414

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0150	26310		2108	14442	0000	00000	6712
0010	0075	28077		2253	14433	0060	00003	5325
0020	-0058	29428		2366	14392	0108	00010	4242
0030	-0096	31004		2494	14398	0145	00019	3020
0050	-0129	31958		2572	14399	0198	00040	2277
0075	-0140	32420		2610	14404	0251	00073	1917
0100	-0135	32661		2629	14414	0297	00114	1732

C-REF-NO 340 YR 1960 DEPTH 165 WAVES 1 24XX AIR T 00.6 VIS 98  
 CONS. NO 003 MONTH 8 MXSAMPD 01 WAVES 2 0682 WET B STN 003  
 LAT 74-230N DAY 30 NO.DPTH 7 WND-DIR 060 WW-CODE 02  
 LON 94-310W HR 08.4 W-COLOR WND-SPD 11 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
0000	0095	29280		2348	14457	
0010	0108	29071		2331	14462	
0020	0085	29451		2362	14458	
0030	-0032	30658		2464	14423	
0050	-0046	32072		2579	14439	
0075	-0108	32579		2622	14421	
0100	-0123	32854		2644	14422	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0095	29280		2348	14457	0000	00000	4413
0010	0108	29071		2331	14462	0045	00002	4579
0020	0085	29451		2362	14458	0090	00009	4277
0030	-0032	30658		2464	14423	0128	00019	3305
0050	-0046	32072		2579	14439	0183	00040	2215
0075	-0108	32579		2622	14421	0234	00072	1804
0100	-0123	32854		2644	14422	0277	00110	1587

C-REF-NO 340 YR 1960 DEPTH 137 WAVES 1 XX AIR T 00.6 VIS 98  
 CONS. NO 004 MONTH 8 MXSAMPD 01 WAVES 2 0682 WET B STN 004  
 LAT 74-320N DAY 30 NO.DPTH 7 WND-DIR 060 WW-CODE  
 LON 94-300W HR 09.7 W-COLOR WND-SPD 14 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARD 1008. CLD-AMT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0090	30249		2426	14468	
0010	0086	30246		2426	14468	
0020	0080	30308		2431	14468	
0030	0046	30679		2463	14459	
0050	-0054	32326		2599	14439	
0075	-0060	32767		2635	14447	
0100	-0065	32877		2644	14450	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0090	30249		2426	14468	0000	00000	3670
0010	0086	30246		2426	14468	0037	00002	3670
0020	0080	30308		2431	14468	0074	00008	3619
0030	0046	30679		2463	14459	0108	00016	3320
0050	-0054	32326		2599	14439	0162	00037	2018
0075	-0060	32767		2635	14447	0209	00066	1677
0100	-0065	32877		2644	14450	0250	00103.	1590

C-REF-NO 340 YR 1960 DEPTH 110 WAVES 1 06X3 AIR T 01.1 VIS 97  
 CONS. NO 005 MONTH 8 MXSAMPD 01 WAVES 2 0626 WET B STN 005  
 LAT 74-365N DAY 30 NO.DPTH 6 WND-DIR 060 WW-CODE 02  
 LUN 94-300W HR 10.4 W-COLOR WND-SPD 14 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0090	30110		2415	14466
0010		0082	30101		2415	14464
0020		0072	30153		2419	14462
0030		0056	30616		2457	14463
0050		-0044	32120		2582	14441
0075		-0053	32587		2620	14447

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0090	30110		2415	14466	0000	00000	3776
0010	0082	30101		2415	14464	0038	00002	3779
0020	0072	30153		2419	14462	0076	00008	3734
0030	0056	30616		2457	14463	0111	00017	3372
0050	-0044	32120		2582	14441	0167	00038	2179
0075	-0053	32587		2620	14447	0218	00070	1817

C-REF-NO 340 YR 1960 DEPTH 146 WAVES 1 10X2 AIR T 01.1 VIS 98  
 CONS. NO 006 MONTH 8 MXSAMPD 01 WAVES 2 1082 WET B STN 006  
 LAT 74-415N DAY 30 NO.DPTH 7 WND-DIR 110 WW-CODE 02  
 LON 93-140W HR 13.4 W-COLOR WND-SPD 09 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0089	30259		2427	14468
0010		0088	30250		2426	14469
0019		0085	30320		2432	14470
0029		0079	30471		2444	14471
0048		-0048	31541		2536	14431
0063			32484			
0077		-0053	32745		2633	14450

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0089	30259		2427	14468	0000	00000	3662
0010	0088	30250		2426	14469	0037	00002	3668
0020	0085	30327		2433	14471	0073	00007	3607
0030	0073	3051 C		2448	14469	0109	00017	3459
0050	-0005 I	3168 E		2546	14453	0169	00040	2528
0075	-0050 B	3270 F		2630	14450	0223	00073	1729

C-REF-NO 340 YR 1960 DEPTH 146 WAVES 1 10X2 AIR T 01.1 VIS 97  
 CONS. NO 007 MONTH 8 MXSAMPD 01 WAVES 2 1082 WET B STN 007  
 LAT 74-415N DAY 30 NO.DPTH 8 WND-DIR 110 WW-CODE 02  
 LON 93-050W HR 14.2 W-COLOR WND-SPD 10 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0085	30234		2425	14466
0010		0080	30213		2424	14465
0019		0082	30277		2429	14468
0029		0057	30623		2458	14463
0048		-0033	31544		2536	14438
0072		-0063	32724		2632	14444
0097		-0097	32915		2649	14435
0121		-0121	32971		2654	14428

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0085	30234		2425	14466	0000	00000	3679
0010	0080	30213		2424	14465	0037	00002	3692
0020	0080	30303		2431	14468	0074	00008	3623
0030	0052	30667		2462	14462	0109	00016	3332
0050	-0037	3166 D		2545	14438	0168	00040	2533
0075	-0067	3278 E		2636	14443	0221	00072.	1665
0100	-0098	3308 I		2662	14437	0259	00107	1420

C-REF-NO 340 YR 1960 DEPTH 123 WAVES 1 10X2 AIR T 01.1 VIS 97  
 CONS. NO 008 MONTH 8 MXSAMPD 01 WAVES 2 1082 WET B STN 008  
 LAT 74-410N DAY 30 NO.DPTH 7 WND-DIR 110 WW-CODE 02  
 LON 92-380W HR 15.3 W-COLOR WND-SPD 12 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0087	30296		2430	14468
	0009	0080	30283		2429	14466
	0019	0082	30291		2430	14468
	0028	0057	30745		2468	14465
	0046	0029	31096		2497	14460
	0070	-0100	32456		2612	14423
	0093	-0110	32976		2654	14429

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0087	30296		2430	14468	0000	00000	3633
0010	0081	3027 C		2428	14466	0037	00002	3648
0020	0080	3034 C		2434	14468	0073	00007	3598
0030	0055	3079 G		2471	14464	0107	00016	3240
0050	0007 B	3132 I		2516	14453	0168	00041	2814
0075	-0076 G	3234 I		2602	14433	0229	00078	1996

C-REF-NO 340 YR 1960 DEPTH 119 WAVES 1 10X2 AIR T 02.2 VIS 97  
 CONS. NO 009 MONTH 8 MXSAMPD 01 WAVES 2 1082 WET B STN 009  
 LAT 74-400N DAY 30 NO.DPTH 7 WND-DIR 110 WW-CODE 02  
 LUN 92-120W HR 17.2 W-COLOR WND-SPD 12 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0095	30193		2421	14470
	0009	0088	30181		2421	14468
	0019	0086	30186		2421	14469
	0028	0046	30708		2465	14459
	0047	-0009	31370		2521	14446
	0070	-0083	32448		2610	14431
	0094	-0110	33002		2656	14430

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0095	30193		2421	14470	0000	00000	3715
0010	0089	3017 C		2420	14468	0037	00002	3731
0020	0082	3024 D		2425	14468	0075	00008	3676
0030	0039	3079 D		2472	14458	0109	00016	3234
0050	-0020	3152 E		2533	14444	0169	00040	2650
0075	-0083 B	3247 I		2612	14431	0226	00076	1899

C-REF-NO 340 YR 1960 DEPTH 137 WAVES 1 11X6 AIR T 01.1 VIS 97  
 CONS. NO 010 MONTH 8 MXSAMPD 01 WAVES 2 XX WET B STN 010  
 LAT 74-395N DAY 30 NO.DPTH 7 WND-DIR 110 WW-CODE 02  
 LON 91-500W HR 18.4 W-COLOR WND-SPD 12 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
	0000	0080	30338		2434	14465
	0009	0068	30345		2435	14461
	0018	0064	30342		2435	14461
	0027	0075	30761		2468	14473
	0045	0035	31105		2497	14462
	0067	-0099	32006		2575	14416
	0089	-0122	32788		2639	14420

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0080	30338		2434	14465	0000	00000	3597
0010	0067	3033 C		2434	14461	0036	00002	3593
0020	0067	3042 F		2441	14463	0072	00007	3524
0030	0073	3083 H		2473	14474	0106	00016	3218
0050	0004 B	3129 F		2514	14451	0167	00040	2832
0075	-0088 F	3220 I		2591	14425	0229	00079	2099

C-REF-NO 340 YR 1960 DEPTH 161 WAVES 1 11X6 AIR T 02.2 VIS  
 CONS. NO 011 MONTH 8 MXSAMPD 01 WAVES 2 XX WET B STN 011  
 LAT 74-315N DAY 30 NO.DPTH 8 WND-DIR 110 WW-CODE 01  
 LON 91-480W HR 19.7 W-COLOR WND-SPD CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0096	30238		2425	14471	
0009	0088	30226		2424	14469	
0019	0083	30291		2430	14469	
0028	0036	31073		2495	14460	
0047	-0114	32265		2597	14410	
0070	-0091	32832		2642	14432	
0094	-0119	33019		2658	14426	
0122	-0122	33392		2688	14434	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0096	30238		2425	14471	0000	00000	3682
0010	0089	3021 D		2423	14469	0037	00002	3698
0020	0079	3036 E		2436	14468	0074	00007	3576
0030	0018 B	31229		2508	14454	0106	00016	2887
0050	-0116 B	3238 D		2606	14411	0155	00035	1959
0075	-0096	3288 E		2646	14432	0199	00063.	1576
0100	-0107 C	3319 I		2671	14435	0236	00095	1335

C-REF-NO 340 YR 1960 DEPTH WAVES 1 11X6 AIR T 03.3 VIS 98  
 CONS. NO 012 MONTH 8 MXSAMPD 03 WAVES 2 XX WET B STN 012  
 LAT 74-225N DAY 30 NO.DPTH 11 WND-DIR 110 WW-CODE .01  
 LON 91-490W HR 21.6 W-COLOR WND-SPD CLD-TPE 2  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
	0000	0045	30793		2472	14455
	0010	0019	30769		2471	14445
	0020	0016	30773		2472	14445
	0030	-0104	31862		2564	14406
	0049	-0142	32464		2613	14400
	0074	-0138	32730		2635	14409
	0099	-0121	32906		2649	14424
	0149	-0120	33220		2674	14437
	0199	-0100	33748		2716	14462
	0249	-0084	33866		2725	14480
	0299	-0063	33905		2727	14498

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0045	30793		2472	14455	0000	00000	3234
0010	0019	30769		2471	14445	0033	00002	3240
0020	0016	30773		2472	14445	0065	00007	3235
0030	-0104	31862		2564	14406	0093	00014	2359
0050	-0143	32481		2615	14400	0136	00031	1872
0075	-0137	32738		2635	14410	0180	00059	1674
0100	-0121	32917		2649	14424	0221	00095	1540
0125	-0119	3306 D		2661	14431	0258	00138	1427
0150	-0120	33232		2675	14438	0293	00186	1296
0175	-0111	3351 I		2697	14450	0323	00236	1088
0200	-0100	33753		2716	14462	0348	00284	0902
0225	-0092	3384 E		2723	14472	0370	00332	0838
0250	-0082	3392 I		2729	14481	0390	00381	0778
0300	-0063	33902		2727	14498	0430	00494	0800

C-REF-NO 340 YR 1960 DEPTH . 251 WAVES 1 08X6 AIR T VIS 97  
 CONS. NO 013 MONTH 8 MXSAMPD 02 WAVES 2 0882 WET B STN 013  
 LAT 74-133N DAY 30 NO.DPTH . 9 WND-DIR 080 WW-CODE 02  
 LON 91-482W HR 23.2 W-COLOR WND-SPD 13 CLD-TPE  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0138	27942		2239	14459
0010		0020	31220		2507	14451
0020		-0089	31718		2552	14409
0030		-0115	31981		2574	14402
0050		-0135	32367		2605	14402
0075		-0138	32689		2631	14409
0100		-0126	32905		2649	14422
0149		-0116	33251		2676	14439
0199		-0116	33746		2716	14455

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0138	27942		2239	14459	0000	00000	5457
0010	0020	31220		2507	14451	0042	00001	2896
0020	-0089	31718		2552	14409	0069	00006	2474
0030	-0115	31981		2574	14402	0093	00012	2265
0050	-0135	32367		2605	14402	0135	00029	1961
0075	-0138	32689		2631	14409	0182	00058	1712
0100	-0126	32905		2649	14422	0223	00095	1547
0125	-0119	3308 C		2663	14432	0260	00137	1414
0150	-0115	3330 H		2680	14441	0293	00184	1248
0175	-0114	3352 E		2698	14449	0323	00233	1076
*0200	-0116	33756		2717	14455	0348	00281	0894

C-REF-NO 340 YR 1960 DEPTH 132 WAVES 1 09XX AIR T 01.7 VIS 97  
 CONS. NO 014 MONTH 8 MXSAMPO 01 WAVES 2 0982 WET B 01.5 STN 014  
 LAT 74-063N DAY 31 NO.DPTH 7 WND-DIR 090 WW-CODE 60  
 LON 91-520W HR 00.2 W-COLOR WND-SPD 12 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0100	28582		2292	14450
	0010	0090	28570		2292	14447
	0020	-0068	30205		2429	14398
	0030	-0104	31153		2506	14396
	0050	-0129	32075		2582	14400
	0074	-0138	32398		2608	14405
	0099	-0125	32658		2629	14419

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0100	28582		2292	14450	0000	00000	4950
0010	0090	28570		2292	14447	0050	00003	4954
0020	-0068	30205		2429	14398	0093	00009	3642
0030	-0104	31153		2506	14396	0126	00017	2903
0050	-0129	32075		2582	14400	0177	00037	2187
0075	-0138	3254 I		2620	14407	0227	00069	1824
0100	-0124	3265 B		2628	14419	0272	00109.	1741

C-REF-NO 340 YR 1960 DEPTH 284 WAVES 1 XX AIR T 00.6 VIS 97  
 CONS. NO 015 MONTH 8 MXSAMPD 02 WAVES 2 1082 WET B STN 015  
 LAT 73-520N DAY 31 NO.DPTH 10 WND-DIR 100 WW-CODE 02  
 LON 90-080W HR 05.8 W-COLOR WND-SPD 04 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0060	30183		2422	14454	
0010	-0047	31067		2498	14418	
0020	-0065	31347		2521	14415	
0030	-0093	31521		2536	14406	
0050	-0131	32152		2588	14401	
0075	-0138	32362		2605	14404	
0100	-0141	32718		2634	14412	
0150	-0126	33106		2665	14433	
0200	-0098	33706		2712	14463	
0250	-0053	34033		2737	14496	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0060	30183		2422	14454	0000	00000	3707
0010	-0047	31067		2498	14418	0034	00002	2988
0020	-0065	31347		2521	14415	0063	00006	2766
0030	-0093	31521		2536	14406	0090	00013	2624
0050	-0131	32152		2588	14401	0138	00032	2127
0075	-0138	32362		2605	14404	0189	00065	1962
0100	-0141	32718		2634	14412	0235	00105	1687
0125	-0136	3293 I		2651	14421	0275	00152	1527
0150	-0126	33106		2665	14433	0312	00204	1390
0175	-0114	3341 G		2689	14447	0344	00257	1160
0200	-0098	33706		2712	14463	0371	00307	0939
0225	-0077	3383 I		2722	14478	0393	00356	0849
0250	-0053	34033		2737	14496	0413	00404	0707

C-REF-NO 340 YR 1960 DEPTH 344 WAVES 1 XX AIR T 03.3 VIS 98  
 CONS. NO 016 MONTH 8 MXSAMPD 01 WAVES 2 0982 WET B STN 016  
 LAT 73-460N DAY 31 NO.DPTH 8 WND-DIR 090 WW-CODE 02  
 LON 89-440W HR 07.1 W-COLOR WND-SPD 12 CLD-TPE 8  
 MARSD SQ 261 W-TRNSP BARO 1007. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0135	30256		2424	14489
0010		0031	31134		2500	14455
0020		-0080	31845		2562	14415
0030		-0037	32145		2584	14441
0050		-0146	32479		2615	14398
0075		-0143	32715		2634	14407
0100		-0127	32850		2644	14420
0150		-0119	33296		2680	14439

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0135	30256		2424	14489	0000	00000	3688
0010	0031	31134		2500	14455	0033	00002	2966
0020	-0080	31845		2562	14415	0060	00006	2380
0030	-0037	32145		2584	14441	0083	00011	2164
0050	-0146	32479		2615	14398	0124	00028	1873
0075	-0143	32715		2634	14407	0169	00056	1690
0100	-0127	32850		2644	14420	0210	00093	1589
0125	-0126	3309 G		2664	14429	0248	00136	1402
0150	-0119	33296		2680	14439	0281	00183	1247

C-REF-NO 340 YR 1960 DEPTH WAVES 1 XX AIR T 02.8 VIS 98  
 CONS. NO 017 MONTH 8 MXSAMPD 04 WAVES 2 1182 WET B STN 017  
 LAT 73-415N DAY 31 NO.DPTH 12 WND-DIR 110 WW-CODE 25  
 LON 89-150W HR 08.7 W-COLOR WND-SPD 11 CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 1006. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0125	30658		2457	14490	
0010	0083	30872		2476	14475	
0020	0001	31283		2513	14445	
0030	-0136	32019		2577	14393	
0050	-0139	32254		2596	14398	
0075	-0130	32530		2618	14410	
0100	-0131	32775		2638	14418	
0149	-0132	33028		2659	14429	
0199	-0124	33506		2697	14447	
0249	-0100	33839		2723	14472	
0299	-0040	34056		2738	14511	
0399	0020	34310		2756	14558	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0125	30658		2457	14490	0000	00000	3376
0010	0083	30872		2476	14475	0033	00002	3191
0020	0001	31283		2513	14445	0063	00006	2839
0030	-0136	32019		2577	14393	0089	00013	2230
0050	-0139	32254		2596	14398	0132	00030	2047
0075	-0130	32530		2618	14410	0181	00061	1836
0100	-0131	32775		2638	14418	0225	00100	1646
0125	-0132	3291 G		2649	14423	0265	00146	1540
0150	-0132	33037		2659	14429	0302	00199	1441
0175	-0129	3327 E		2678	14438	0336	00256	1261
0200	-0124	33514		2698	14448	0366	00312	1076
0225	-0115	33695		2712	14459	0391	00367	0939
0250	-0099	33844		2724	14472	0413	00421	0831
0300	-0053 C	3407 C		2740	14505	0451	00528	0674
0400	0022	34312		2756	14559	0512	00743	0534

C-REF-NO 340 YR 1960 DEPTH 377 WAVES 1 XX AIR T 02.8 VIS 98  
 CONS. NO 018 MONTH 8 MXSAMPO 03 WAVES 2 1182 WET B STN 018  
 LAT 73-358N DAY 31 NO.DPTH 12 WND-DIR 120 WW-CODE 25  
 LUN 88-480W HR 10.7 W-COLOR WND-SPD 11 CLD-TPE 8  
 MARSD SQ 261 W-TRNSP BARO 1006. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
	0000	0148	30472		2441	14498
	0010	0098	30918		2479	14483
	0020	-0045	31401		2525	14425
	0030	-0086	31856		2563	14414
	0050	-0156	32184		2591	14389
	0075	-0139	32418		2610	14405
	0100	-0132	32694		2632	14416
	0150	-0140	33010		2657	14425
	0200	-0107	33691		2712	14458
	0249	-0072	33954		2732	14486
	0299	-0023	34128		2743	14520
	0349	0006	34253		2752	14543

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0148	30472		2441	14498	0000	00000	3531
0010	0098	30918		2479	14483	0034	00002	3163
0020	-0045	31401		2525	14425	0063	00006	2732
0030	-0086	31856		2563	14414	0089	00013	2369
0050	-0156	32184		2591	14389	0134	00031	2097
0075	-0139	32418		2610	14405	0184	00063	1919
0100	-0132	32694		2632	14416	0230	00103	1707
0125	-0137	3285 I		2644	14420	0272	00151	1586
0150	-0140	33010		2657	14425	0310	00205	1459
0175	-0126	3335 I		2685	14440	0343	00261	1199
0200	-0107	33691		2712	14458	0370	00312	0947
0225	-0090	3386 D		2724	14473	0393	00361	0826
0250	-0071	33958		2732	14487	0413	00409	0756
0300	-0028	3414 B		2745	14518	0448	00508	0638

C-REF-NO 340 YR 1960 DEPTH 256 WAVES 1 14X1 AIR T VIS 97  
 CUNS. NO 019 MONTH 8 MXSAMPD 02 WAVES 2 1142 WET B STN 019  
 LAT 73-32N DAY 31 NO.DPTH 10 WND-DIR 340 WW-CODE 50  
 LON 88-257W HR 12.6 W-COLOR WND-SPD 03 CLD-TPE 8  
 MARSD SQ 261 W-TRNSP BARO 1006. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0040	28522		2290	14422	
0010	-0001	28349		2277	14402	
0020	-0045	29097		2339	14393	
0030	-0092	29990		2412	14385	
0050	-0103	31888		2566	14410	
0074	-0139	32344		2604	14403	
0099	-0127	32657		2629	14418	
0141	-0143	32922		2650	14421	
0188	-0121	33413		2690	14446	
0225	-0058	33966		2732	14489	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0040	28522		2290	14422	0000	00000	4971
0010	-0001	28349		2277	14402	0050	00003	5089
0020	-0045	29097		2339	14393	0099	00010	4500
0030	-0092	29990		2412	14385	0140	00020	3800
0050	-0103	31888		2566	14410	0202	00044	2338
0075	-0139	32359		2605	14404	0256	00078	1964
0100	-0127	32664		2629	14418	0303	00120	1732
0125	-0136	3283 F		2643	14420	0345	00168	1600
0150	-0143	32999		2657	14423	0383	00222	1467
0175	-0132	33255		2677	14436	0418	00279	1273
0200	-0102	33580		2702	14459	0447	00335	1033
0225	-0058	33966		2732	14489	0469	00383	0757

C-REF-NO 340 YR 1960 DEPTH 260 WAVES 1 19X3 AIR T 02.2 VIS 97  
 CONS. NO 020 MONTH 9 MXSAMPD 02 WAVES 2 1982 WET 8 STN 020  
 LAT 73-260N DAY 02 NO.DPTH 10 WND-DIR 110 WW-CODE 02  
 LUN 90-580W HR 17.0 W-COLOR WND-SPD 08 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1009. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0100	30498		2446	14476
	0010	0094	30491		2445	14475
	0020	-0031	31415		2525	14432
	0030	-0065	31681		2548	14422
	0050	-0143	32053		2580	14393
	0075		32328			
2	0100	-0138	32553		2620	14411
	0149	-0144	32938		2652	14422
	0199	-0091	33736		2715	14466
	0249	-0056	33983		2733	14494

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0100	30498		2446	14476	0000	00000	3485
0010	0094	30491		2445	14475	0035	00002	3487
0020	-0031	31415		2525	14432	0066	00006	2726
0030	-0065	31681		2548	14422	0093	00013.	2509
0050	-0143	32053		2580	14393	0140	00032	2201
0075	-0158 D	32328		2603	14395	0193	00066	1984
0100	-0138	32553		2620	14411	0240	00108	1814
0125	-0144	3273 G		2635	14415	0284	00159	1675
0150	-0143	32955		2653	14423	0324	00215	1501
0175	-0119	3336 I		2685	14444	0358	00271	1195
0200	-0103 C	3359 I		2703	14459	0386	00325	1029
0225	-0082 B	3380 I		2719	14476	0410	00377	0875
*0250	-0055	33990		2734	14495	0431	00426	0739

C-REF-NO 340 YR 1960 DEPTH WAVES 1 XO AIR T 01.1 VIS 98  
 CONS. NO 021 MONTH 9 MXSAMPD 03 WAVES 2 XO WET B STN 021  
 LAT 73-225N DAY 02 NO.DPTH 12 WND-DIR 190 WW-CODE 01  
 LON 90-360W HR 18.4 W-COLOR WND-SPD 08 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1011. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0040				
	0010	-0072				
	0020	-0130				
	0030	-0160				
	0050	-0165				
	0075	-0150				
	0100	-0137				
	0150	-0134	33085		2663	14429
	0200	-0100	33673		2710	14461
	0250	-0041	34055		2738	14502
	0300	-0019	34155		2745	14522
	0340	-0017	34163		2746	14530

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0040	2982 I		2394	14440	0000	00000	3977
0010	-0072							
0020	-0130							
0030	-0160							
0050	-0165							
0075	-0150							
0100	-0137							
0125	-0136							
0150	-0134	33085		2663	14429	0406	00163	1404
0175	-0121	3342 B		2690	14444	0438	00216	1154
0200	-0100	33673		2710	14461	0465	00267	0963
0225	-0070	33895		2727	14483	0487	00316	0806
0250	-0041	34055		2738	14502	0506	00362	0696
0300	-0019	34155		2745	14522	0540	00456	0630

C-REF-NO 340 YR 1960 DEPTH 501 WAVES 1 XX AIR T 01.7 VIS 98  
 CONS. NO 022 MONTH 9 MXSAMPD 05 WAVES 2 2042 WET B STN 022  
 LAT 73-185N DAY 02 NO.DPTH 13 WND-DIR 200 WW-CODE 02  
 LON 90-030W HR 20.4 W-COLOR WND-SPD 12 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1011. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0011	28201		2265	14404	
0010	-0021	30168		2424	14418	
0020	-0074	31056		2498	14407	
0030	-0126	31722		2553	14394	
0050	-0158	32069		2582	14387	
0075	-0160	32302		2601	14393	
0100	-0140	32576		2622	14411	
0150	-0125	33186		2671	14434	
0200	-0091	33730		2714	14466	
0250	-0060	33948		2731	14492	
0300	-0020	34132		2744	14521	
0400	0015	34288		2754	14556	
0475	0025	34320		2757	14573	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0011	28201		2265	14404	0000	00000.	5207
0010	-0021	30168		2424	14418	0045	00002	3686
0020	-0074	31056		2498	14407	0078	00007	2987
0030	-0126	31722		2553	14394	0106	00014	2461
0050	-0158	32069		2582	14387	0152	00033	2185
0075	-0160	32302		2601	14393	0205	00066	2003
0100	-0140	32576		2622	14410	0253	00109	1796
0125	-0132	3288 B		2647	14423	0295	00157	1563
0150	-0125	33186		2671	14434	0332	00208	1329
0175	-0109	3348 D		2695	14450	0362	00259	1107
0200	-0091	33730		2714	14466	0388	00308	0923
0225	-0076	3386 D		2724	14479	0410	00356	0828
0250	-0060	33948		2731	14492	0430	00405	0769
0300	-0020	34132		2744	14521	0466	00505	0647
0400	0015	34288		2754	14556	0526	00719	0548

C-REF-NO 340 YR 1960 DEPTH 384 WAVES 1 XX AIR T 01.1 VIS 98  
 CONS. NO 023 MONTH 9 MXSAMPD 04 WAVES 2 1842 WET B STN 023  
 LAT 73-095N DAY 02 NO.DPTH 12 WND-DIR 180 WW-CODE 02  
 LON 89-305W HR 21.9 W-COLOR WND-SPD 04 CLD-TPE 8  
 MARSD SQ 261 W-TRNSP BARO 1011. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0005	28827		2316	14410	
0010	-0010	28736		2309	14403	
0020	-0086	31359		2523	14406	
0030	-0124	31877		2565	14397	
0050	-0164	32165		2590	14385	
0075		32402				
0100	-0139	32698		2632	14413	
0150	-0132	33104		2665	14430	
0200	-0104	33641		2707	14459	
0250	-0053	33995		2734	14496	
0300	-0007	34174		2746	14528	
0360	0013	34270		2753	14548	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0005	28827		2316	14410	0000	00000	4725
0010	-0010	28736		2309	14403	0048	00002.	4789
0020	-0086	31359		2523	14406	0086	00008	2751
0030	-0124	31877		2565	14397	0111	00014	2342
0050	-0164	32165		2590	14385	0156	00032	2110
0075	-0162 C	32402		2609	14394	0207	00065	1926
0100	-0139	32698		2632	14413	0253	00105	1702
0125	-0136	3291 E		2649	14421	0293	00152	1540
0150	-0132	33104		2665	14430	0330	00204	1390
0175	-0121	3338 D		2687	14443	0363	00258	1184
0200	-0104	33641		2707	14459	0390	00310	0986
0225	-0080	33840		2723	14477	0413	00360	0843
0250	-0053	33995		2734	14496	0433	00408	0736
0300	-0007	34174		2746	14528	0467	00505	0622

C-REF-NO 340 YR 1960 DEPTH 220 WAVES 1 XO AIR T 00.6 VIS 98  
 CONS. NO 024 MONTH 9 MXSAMPD 02 WAVES 2 XO WET B STN 024  
 LAT 73-085N DAY 02 NO.DPTH 9 WND-DIR 170 WW-CODE 02  
 LON 89-200W HR 23.8 W-COLOR WND-SPD 02 CLD-TPE 8  
 MARSD SQ 261 W-TRNSP BARO 1011. CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0023	15590		1252	14217
	0010	-0103	27515		2213	14343
	0020	-0051	28664		2304	14385
	0030	-0066	29136		2343	14386
	0050	-0132	31935		2570	14397
	0065		32027			
	0090	-0137	32145		2587	14404
	0140	-0162	32434		2611	14405
	0190	-0145	32868		2646	14427

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0023	15590		1252	14217	0000	00000	14996
0010	-0103	27515		2213	14343	0103	00003	5708
0020	-0051	28664		2304	14385	0156	00011	4831
0030	-0066	29136		2343	14386	0203	00023	4463
0050	-0132	31935		2570	14397	0271	00048.	2294
0075	-0144 C	32076		2582	14397	0327	00084	2181
0100	-0143	32194		2592	14404	0381	00132	2088
0125	-0156	32336		2603	14404	0432	00191	1974
0150	-0152 B	3252 B		2618	14412	0480	00258	1831
0175	-0148	32729		2635	14421	0524	00331	1670

C-REF-NO 340 YR 1960 DEPTH 260 WAVES 1 XX AIR T -00.6 VIS 98  
 CONS. NO 025 MONTH 9 MXSAMPD 02 WAVES 2 XO WET B STN 025  
 LAT 72-43'N DAY 03 NO.DPTH 10 WND-DIR 320 WW-CUDE 02  
 LON 91-57'W HR 06.1 W-COLOR WND-SPD CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1010. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0050	28824		2314	14430	
0010	-0022	31190		2507	14432	
0020	-0127	31929		2570	14394	
0030	-0155	32118		2586	14385	
0050	-0152	32243		2596	14392	
0075		32450				
0100	-0142	32685		2631	14411	
0150	-0112	33426		2690	14444	
0200	-0067	33944		2731	14480	
0250	-0037	34057		2738	14504	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0050	28824		2314	14430	0000	00000	4743
0010	-0022	31190		2507	14432	0038	00001	2902
0020	-0127	31929		2570	14394	0065	00005	2302
0030	-0155	32118		2586	14385	0087	00011	2150
0050	-0152	32243		2596	14392	0129	00028	2053
0075	-0148	32450		2612	14401	0179	00060	1892
0100	-0142	32685		2631	14411	0224	00100	1712
0125	-0129	3305 H		2660	14426	0264	00146	1436
0150	-0112	33426		2690	14444	0297	00191	1150
0175	-0090	3372 C		2714	14463	0323	00235	0929
0200	-0067	33944		2731	14480	0344	00276	0770
0225	-0055	3403 D		2737	14491	0363	00316	0714
0250	-0037	34057		2738	14504	0381	00360	0697

C-REF-NO 340 YR 1960 DEPTH 448 WAVES 1 XX AIR T -01.1 VIS 98  
 CONS. NO 026 MONTH 9 MXSAMPD 04 WAVES 2 XX WET B STN 026  
 LAT 72-390N DAY 03 NO.DPTH 12 WND-DIR 020 WW-CODE 02  
 LON 91-100W HR 08.5 W-COLOR WND-SPD 03 CLD-TPE 8  
 MARSD SQ 262 W-TRNSP BARO 1009. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0050	26260		2111	14349
	0010	-0062	29487		2371	14389
	0020	-0116	31425		2529	14392
	0030	-0145	31862		2565	14387
	0050	-0135	32113		2585	14398
	0075	-0148	32322		2602	14399
	0100	-0140	32539		2619	14410
	0149	-0142	32886		2647	14422
	0199	-0113	33455		2693	14452
	0249	-0064	33913		2728	14489
	0299	-0016	34155		2745	14523
	0398	0013	34279		2754	14555

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0050	26260		2111	14349	0000	00000	6687
0010	-0062	29487		2371	14389	0055	00002.	4197
0020	-0116	31425		2529	14392	0089	00007	2692
0030	-0145	31862		2565	14387	0115	00013	2349
0050	-0135	32113		2585	14398	0160	00032	2156
0075	-0148	32322		2602	14399	0212	00065	1991
0100	-0140	32539		2619	14410	0260	00108	1824
0125	-0141	32710		2633	14416	0304	00159	1691
0150	-0142	32897		2648	14422	0345	00216	1546
0175	-0130	3318E		2671	14436	0381	00276	1334
0200	-0112	33466		2694	14453	0412	00335	1117
0225	-0089	3371B		2713	14471	0438	00391	0936
0250	-0063	33919		2728	14490	0460	00444	0789
0300	-0021	3418E		2748	14522	0495	00543	0608
0400	0013	34275		2754	14555	0554	00753	0557

C-REF-NO 340 YR 1960 DEPTH 348 WAVES 1 XX AIR T -00.6 VIS 97  
 CONS. NO 027 MONTH 9 MXSAMPD 03 WAVES 2 XX WET B STN 027  
 LAT 72-345N DAY 03 NO.DPTH 11 WND-DIR 040 WW-CODE  
 LON 90-260W HR 11.8 W-COLOR WND-SPD 02 CLD-TPE 0  
 MARSD SQ 262 W-TRNSP BARO 1009. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
0000	-0090	26270		2112	14330	
0010	-0113	28375		2282	14350	
0020	-0141	30926		2489	14374	
0030	-0126	31500		2535	14390	
0050	-0146	32052		2580	14392	
0075	-0155	32275		2598	14395	
0099	-0142	32472		2614	14408	
0149	-0140	32919		2650	14423	
0199	-0111	33533		2699	14454	
0248	-0056	33959		2731	14494	
0298	0000	34213		2749	14531	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0090	26270		2112	14330	0000	00000	6674
0010	-0113	28375		2282	14350	0059	00003	5043
0020	-0141	30926		2489	14374	0099	00008	3071
0030	-0126	31500		2535	14390	0128	00016	2631
0050	-0146	32052		2580	14392	0177	00035	2201
0075	-0155	32275		2598	14395	0230	00069	2025
0100	-0142	32480		2615	14408	0279	00113	1869
0125	-0141	3269 B		2632	14416	0324	00164	1706
0150	-0140	32932		2651	14424	0365	00221	1520
0175	-0128	3325 E		2676	14438	0400	00280	1281
0200	-0109	33554		2701	14455	0429	00336	1051
0225	-0083	33786		2718	14475	0454	00389	0883
0250	-0058	33978		2733	14493	0474	00439	0747
0300	0003	34219		2750	14533	0508	00533	0594

C-REF-NO 340	YR 1960	DEPTH	WAVES 1	XX	AIR T	01.1	VIS	98
CONS. NO 028	MONTH 9	MXSAMPD	02	WAVES 2	XX	WET B		STN 028
LAT 72-325N	DAY 03	NO.DPTH	9	WND-DIR		WW-CODE		
LON 90-100W	HR 14.3	W-COLOR		WND-SPD		CLD-TPE	8	
MARSD SQ 262		W-TRNSP		BARO 1008.		CLD-AMT	6	HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0020	08390		0672	14143	
0010	-0107	27250		2191	14337	
0020	-0118	28693		2308	14353	
0030	-0132	30621		2464	14375	
0050	-0150	31482		2534	14382	
0075	-0154	32105		2585	14393	
0100	-0156	32332		2603	14400	
0145	-0141	32825		2643	14421	
0222	-0045	34004		2734	14495	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0020	08390		0672	14143	0000	00000	20681
0010	-0107	27250		2191	14337	0132	00003	5912
0020	-0118	28693		2308	14353	0186	00011	4795
0030	-0132	30621		2464	14375	0227	00021	3306
0050	-0150	31482		2534	14382	0287	00045	2638
0075	-0154	32105		2585	14393	0347	00082	2156
0100	-0156	32332		2603	14399	0399	00129	1979
0125	-0151	32590		2624	14410	0446	00183	1780
0150	-0136	3290 8		2648	14425	0488	00242	1547
0175	-0113	3324 8		2676	14445	0524	00301	1289
*0200	-0080	33630		2706	14470	0553	00356	1004
*0225	-0040	34058		2739	14499	0574	00402	0696

C-REF-NO 340 YR 1960 DEPTH 49 WAVES 1 30X3 AIR T 04.4 VIS 97  
 CONS. NO 029 MONTH 9 MXSAMPD 00 WAVES 2 3042 WET B STN 029  
 LAT 68-510N DAY 05 NO.DPTH 5 WND-DIR 320 WW-CODE 02  
 LON 80-180W HR 22.5 W-COLOR WND-SPD 10 CLD-TPE 2  
 MARSD SQ 225 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0070	31443		2523	14476
0010		0053	31386		2519	14469
0020		0052	31379		2519	14470
0030		0047	31346		2516	14469
0040		0053	31386		2519	14474

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0070	31443		2523	14476	0000	00000	2749
0010	0053	31386		2519	14469	0028	00001	2784
0020	0052	31379		2519	14470	0056	00006	2788
0030	0047	31346		2516	14469	0084	00013	2810

C-REF-NO 340 YR 1960 DEPTH 42 WAVES 1 30X3 AIR T 02.2 VIS 97  
 CONS. NO 030 MONTH 9 MXSAMPD 00 WAVES 2 3042 WET B STN 030  
 LAT 69-115N DAY 06 NO.DPTH 4 WND-DIR 320 WW-CODE 02  
 LON 80-170W HR 00.2 W-COLOR WND-SPD 11 CLD-TPE 2  
 MARSD SQ 225 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0060	31697		2544	14475
	0010	0049	31688		2544	14471
	0020	0050	31686		2543	14473
	0030	0046	31682		2543	14473

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0060	31697		2544	14475	0000	00000	2550
0010	0049	31688		2544	14471	0026	00001	2551
0020	0050	31686		2543	14473	0051	00005	2553
0030	0046	31682		2543	14473	0077	00012	2553

C-REF-NO 340 YR 1960 DEPTH 73 WAVES 1 30X3 AIR T 02.2 VIS  
 CONS. NO 031 MONTH 9 MXSAMPD 01 WAVES 2 3042 WET B STN 031  
 LAT 69-330N DAY 06 NO.DPTH 6 WND-DIR 320 WW-CODE 02  
 LON 81-030W HR 03.0 W-COLOR WND-SPD 09 CLD-TPE 2  
 MARSD SQ 225 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0105	31663		2539	14494
0010		0100	31644		2537	14494
0020		0092	31658		2539	14492
0030		0070	31693		2543	14484
0050		0060	31748		2548	14483
0065		0045	31911		2562	14481

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0105	31663		2539	14494	0000	00000	2599
0010	0100	31644		2537	14494	0026	00001	2610
0020	0092	31658		2539	14492	0052	00005	2595
0030	0070	31693		2543	14484	0078	00012	2557
0050	0060	31748		2548	14483	0129	00033	2509

C-REF-NO 340 YR 1960 DEPTH WAVES 1 XX AIR T 01.1 VIS 98  
 CONS. NO 032 MONTH 9 MXSAMPO 01 WAVES 2 XX WET B STN 032  
 LAT 69-410N DAY 06 NO.DPTH 7 WND-DIR WW-CODE 02  
 LON 81-590W HR 05.3 W-COLOR WND-SPD CLD-TPE 2  
 MARSQ SQ 225 W-TRNSP BARO 1002. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0180	31583		2528	14527
	0010	0137	31698		2540	14511
	0020	0120	31881		2555	14508
	0030	0118	31919		2558	14509
	0050	0075	32322		2593	14498
	0075	0042	32615		2618	14491
	0100	0042	32636		2620	14496

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0180	31583		2528	14527	0000	00000	2704
0010	0137	31698		2540	14511	0027	00001	2590
0020	0120	31881		2555	14508	0052	00005	2441
0030	0118	31919		2558	14509	0076	00011	2411
0050	0075	32322		2593	14498	0122	00030	2079
0075	0042	32615		2618	14491	0171	00061	1838
0100	0042	32636		2620	14496	0217	00102.	1822

C-REF-NO 340 YR 1960 DEPTH WAVES 1 34X3 AIR T 01.7 VIS 97  
 CONS. NO 033 MONTH 9 MXSAMPD 01 WAVES 2 3442 WET B STN 033  
 LAT 69-510N DAY 06 NO.DPTH 7 WND-DIR 340 WW-CODE 00  
 LON 83-060W HR 08.1 W-COLOR WND-SPD 08 CLD-TPE  
 MARSD SQ 225 W-TRNSP BARD 1003. CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0120	31695		2540	14502
	0010	0114	31667		2538	14500
	0020	0114	31688		2540	14502
	0030	0115	31704		2541	14504
	0050	0110	31748		2545	14506
	0075	0109	31778		2548	14510
	0100	0112	31818		2551	14516

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	PUT.EN	SVA
0000	0120	31695		2540	14502	0000	00000	2583
0010	0114	31667		2538	14500	0026	00001	2601
0020	0114	31688		2540	14502	0052	00005	2584
0030	0115	31704		2541	14504	0078	00012	2573
0050	0110	31748		2545	14506	0130	00033	2536
0075	0109	31778		2548	14510	0193	00074	2512
0100	0112	31818		2551	14516	0256	00130	2483

C-REF-NO 340 YR 1960 DEPTH 91 WAVES 1 32X1 AIR T 00.6 VIS 98  
 CONS. NO 034 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 034  
 LAT 69-553N DAY 06 NO.DPTH 6 WND-DIR 320 WW-CODE 01  
 LON 84-180W HR 11.0 W-COLOR WND-SPD 06 CLD-TPE 5  
 MARSD SQ 225 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0150	31378		2513	14511
	0010	0144	31304		2508	14509
	0020	0121	31667		2538	14505
	0030	0098	31867		2555	14499
	0050	0099	31870		2556	14503
	0075	0101	31870		2555	14508

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0150	31378		2513	14511	0000	00000	2842
0010	0144	31304		2508	14509	0029	00001	2894
0020	0121	31667		2538	14505	0056	00006	2604
0030	0098	31867		2555	14499	0082	00012	2439
0050	0099	31870		2556	14503	0131	00032	2437
0075	0101	31870		2555	14508	0192	00072	2437

C-REF-NO 340 YR 1960 DEPTH 360 WAVES 1 34X1 AIR T 00.6 VIS 98  
 CONS. NO 035 MONTH 9 MXSAMPD 03 WAVES 2 XX WET B STN 035  
 LAT 69-560N DAY 06 NO.DPTH 11 WND-DIR 340 WW-CODE 01  
 LON 85-200W HR 14.5 N-COLOR WND-SPD 08 CLD-TPE 5  
 MARSD SQ 225 W-TRNSP BARO 1003. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0110	30266		2426	14478	
0010	0112	30162		2418	14479	
0019	0113	30587		2452	14486	
0029	0099	30860		2475	14486	
0048	0039	31690		2544	14473	
0072	0022	31946		2566	14472	
0097	-0059	32106		2582	14441	
0137	-0129	32279		2598	14418	
0183	-0147	32344		2604	14418	
0228	-0141	32377		2606	14428	
0274	-0131	32396		2608	14441	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0110	30266		2426	14478	0000	00000	3667
0010	0112	30162		2418	14479	0037	00002	3747
0020	0112	3062 B		2454	14487	0073	00007	3400
0030	0096	3091 C		2478	14485	0106	00016	3171
0050	0037	3173 C		2548	14473	0163	00039	2512
0075	0013	31969		2568	14469	0224	00077	2317
0100	-0066	32123		2584	14439	0281	00127	2166
0125	-0115	32238		2594	14422	0334	00189	2060
0150	-0139	3231 B		2600	14416	0385	00261	1999
0175	-0147	32339		2603	14416	0435	00344	1970
0200	-0146	32359		2605	14421	0484	00439	1952
0225	-0142	32375		2606	14427	0533	00546	1939
0250	-0140	32390		2607	14433	0582	00664	1926

C-REF-NO 340 YR 1960 DEPTH 238 WAVES 1 32X3 AIR T -00.6 VIS 97  
 CONS. NO 036 MONTH 9 MXSAMPD 02 WAVES 2 XX WET B STN 036  
 LAT 69-475N DAY 06 NO.DPTH 9 WND-DIR 320 WW-CODE 03  
 LON 87-230W HR 18.7 W-COLOR WND-SPD 09 CLD-TPE 5  
 MARSD SQ 225 W-TRNSP BARO 1005. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0022	28527		2292	14393	
0010	-0052	29940		2407	14400	
0020	-0141	31148		2507	14377	
0030	-0153	31530		2538	14378	
0050	-0160	31887		2567	14383	
0075	-0118	32094		2583	14410	
0100	-0129	32208		2592	14411	
0149	-0158	32316		2602	14406	
0199	-0157	32425		2611	14417	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0022	28527		2292	14393	0000	00000	4947
0010	-0052	29940		2407	14400	0044	00002	3851
0020	-0141	31148		2507	14377	0078	00007	2900
0030	-0153	31530		2538	14378	0106	00014	2602
0050	-0160	31887		2567	14383	0155	00034.	2324
0075	-0118	32094		2583	14410	0212	00070	2173
0100	-0129	32208		2592	14410	0265	00118	2081
0125	-0145	3227 B		2598	14408	0317	00177	2025
0150	-0152 B	3234 E		2604	14410	0367	00248	1968
0175	-0156	3239 C		2608	14413	0417	00330	1927
*0200	-0157	32426		2611	14417	0465	00423	1898

C-REF-NO 340 YR 1960 DEPTH 93 WAVES 1 XX AIR T -00.6 VIS 97  
 CONS. NO 037 MONTH 9 MXSAMPD. 01 WAVES 2 XX WET B STN 037  
 LAT 69-437N DAY 06 NO.DPTH 6 WND-DIR 340 WW-CODE 26  
 LON 88-465W HR 22.1 W-COLOR WND-SPD 09 CLD-TPE 6  
 MARSID SQ 225 W-TRNSP BARO 1005. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0060	29269		2353	14386	
0010	-0065	29501		2372	14388	
0020	-0143	31275		2517	14378	
0030	-0160	31735		2555	14378	
0050	-0168	32018		2578	14381	
0075	-0162	32146		2588	14390	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0060	29269		2353	14386	0000	00000	4366
0010	-0065	29501		2372	14388	0043	00002	4185
0020	-0143	31275		2517	14378	0078	00007	2802
0030	-0160	31735		2555	14378	0104	00014	2443
0050	-0168	32018		2578	14381	0151	00033	2222
0075	-0162	32146		2588	14390	0206	00068	2123

C-REF-NO 340 YR 1960 DEPTH 128 WAVES 1 35X1 AIR T 00.0 VIS 97  
 CONS. NO 038 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 038  
 LAT 70-020N DAY 07 NO.DPTH 7 WND-DIR 320 WW-CODE  
 LON 88-460W HR 00.0 W-COLOR WND-SPD 09 CLD-TPE 6  
 MARSD SQ 261 W-TRNSP BARO 1005. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0060	28528		2293	14375	
0010	-0070	28790		2315	14376	
0020	-0086	29770		2394	14384	
0030	-0119	30938		2489	14386	
0050	-0162	31692		2551	14379	
0075	-0157	32305		2601	14395	
0100	-0151	32417		2610	14403	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0060	28528		2293	14375	0000	00000	4936
0010	-0070	28790		2315	14376	0049	00002	4731
0020	-0086	29770		2394	14384	0092	00009	3972
0030	-0119	30938		2489	14386	0128	00018	3065
0050	-0162	31692		2551	14379	0183	00040	2474
0075	-0157	32305		2601	14395	0240	00075	2002
0100	-0151	32417		2610	14403	0289	00119	1915

C-REF-NO 340 YR 1960 DEPTH 119 WAVES 1 35X1 AIR T -01.1 VIS 97  
 CONS. NO 039 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 039  
 LAT 70-190N DAY 07 NO.DPTH 7 WND-DIR 350 WW-CODE 02  
 LON 88-280W HR 02.4 W-COLOR WND-SPD 08 CLD-TPE 6  
 MARSD SQ 261 W-TRNSP BARO 1005. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0020	29997		2411	14414	
0010	-0015	30054		2415	14419	
0019	-0056	30612		2461	14409	
0029	-0068	30847		2481	14408	
0048	-0111	31721		2552	14404	
0072	-0129	31941		2571	14402	
0097	-0143	32160		2589	14403	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0020	29997		2411	14414	0000	00000	3818
0010	-0015	30054		2415	14419	0038	00002	3775
0020	-0058	3064 C		2464	14409	0074	00007	3310
0030	-0070	3089 C		2484	14408	0106	00016	3112
0050	-0113	3176 D		2556	14403	0162	00038	2434
0075	-0137	3214 I		2587	14402	0219	00074	2137

C-REF-NO 340 YR 1960 DEPTH 146 WAVES 1 32X3 AIR T -02.2 VIS 97  
 CONS. NO 040 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 040  
 LAT 70-190N DAY 07 NO.DPTH 8 WND-DIR 320 WW-CODE 02  
 LON 89-170W HR 04.3 W-COLOR WND-SPD 10 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1005. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0060	28843		2319	14380
	0010	-0063	28818		2317	14380
	0020	-0120	30750		2474	14381
	0030	-0153	31477		2534	14377
	0050	-0161	31903		2568	14383
	0075	-0159	32143		2588	14391
	0100	-0157	32378		2607	14400
	0130	-0161	32393		2608	14403

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0060	28843		2319	14380	0000	00000	4694
0010	-0063	28818		2317	14379	0047	00002	4711
0020	-0120	30750		2474	14381	0087	00008	3210
0030	-0153	31477		2534	14377	0116	00016	2643
0050	-0161	31903		2568	14383	0166	00036	2312
0075	-0159	32143		2588	14391	0222	00071.	2126
0100	-0157	32378		2607	14400	0273	00117	1943
0125	-0160	3240 B		2608	14402	0322	00173	1927

C-REF-NO 340 YR 1960 DEPTH 165 WAVES 1 32X2 AIR T -01.7 VIS 97  
 CONS. NO 041 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 041  
 LAT 70-195N DAY 07 NO.DPTH 8 WND-DIR 320 WW-CODE 03  
 LON 90-180W HR 06.8 W-COLOR WND-SPD 08 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1005. CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0080	28742		2311	14369	
0010	-0113	30189		2429	14375	
0020	-0149	31216		2512	14374	
0030	-0153	31524		2537	14378	
0050	-0155	31825		2562	14385	
0075	-0150	32066		2581	14394	
0100	-0150	32400		2608	14403	
0150	-0150	32626		2627	14415	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0080	28742		2311	14369	0000	00000	4767
0010	-0113	30189		2429	14375	0042	00002	3645
0020	-0149	31216		2512	14374	0075	00007	2846
0030	-0153	31524		2537	14378	0102	00014	2607
0050	-0155	31825		2562	14385	0152	00034	2373
0075	-0150	32066		2581	14394	0210	00070.	2187
0100	-0150	32400		2608	14403	0262	00116	1928
0125	-0148	3251 I		2617	14410	0309	00171	1841
0150	-0150	32626		2627	14415	0354	00235	1751

C-REF-NO 340 YR 1960 DEPTH 201 WAVES 1 XX AIR T -01.1 VIS 97  
 CONS. NO 042 MONTH 9 MXSAMPD 02 WAVES 2 XX WET B STN 042  
 LAT 70-195N DAY 07 NO.DPTH 8 WND-DIR 320 WW-CODE 02  
 LON 90-580W HR 12.7 W-COLOR WND-SPD 04 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1006. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0120	28407		2285	14345
	0010	-0127	28415		2286	14344
	0020	-0138	31302		2519	14380
	0030	-0142	31674		2549	14385
	0050	-0150	32176		2590	14392
	0075	-0144	32474		2614	14403
	0099	-0142	32729		2635	14412
	0179	-0135	32908		2649	14431

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0120	28407		2285	14345	0000	00000	5018
0010	-0127	28415		2286	14344	0050	00003	5010
0020	-0138	31302		2519	14380	0089	00008	2782
0030	-0142	31674		2549	14385	0116	00015	2494
0050	-0150	32176		2590	14392	0162	00033	2104
0075	-0144	32474		2614	14403	0212	00065	1875
0100	-0141	3272 E		2634	14412	0257	00105	1688
0125	-0138	3287 E		2646	14420	0298	00152	1573
*0150	-0136	3293 C		2651	14426	0337	00207	1520
*0175	-0135	32918		2650	14430	0376	00271	1530

C-REF-NO 340 YR 1960 DEPTH 183 WAVES 1 XX AIR T -01.1 VIS 97  
 CONS. NO 043 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 043  
 LAT 71-177N DAY 07 NO.DPTH 8 WND-DIR 320 WW-CODE 03  
 LON 90-380W HR 22.1 W-COLOR WND-SPD 10 CLD-TPE 6  
 MARSD SQ 262 W-TRNSP BARO CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0085	28295		2275	14360	
0010	-0090	28275		2274	14359	
0020	-0087	29252		2352	14376	
0030	-0089	29799		2397	14384	
0050	-0154	31702		2552	14383	
0075	-0165	32272		2598	14390	
0100	-0156	32454		2613	14401	
0150	-0124	33187		2671	14435	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT-EN	SVA
0000	-0085	28295		2275	14360	0000	00000	5111
0010	-0090	28275		2274	14359	0051	00003	5124
0020	-0087	29252		2352	14376	0099	00010	4370
0030	-0089	29799		2397	14384	0141	00020	3948
0050	-0154	31702		2552	14383	0205	00045	2468
0075	-0165	32272		2598	14390	0262	00081.	2025
0100	-0156	32454		2613	14401	0311	00125	1885
0125	-0147	3292 I		2650	14416	0354	00174	1529
0150	-0124	33187		2671	14435	0390	00224	1329

C-REF-NO 340 YR 1960 DEPTH 302 WAVES 1 XX AIR T -02.2 VIS 97  
 CONS. NO 044 MONTH 9 MXSAMPD 03 WAVES 2 XX WET B STN 044  
 LAT 71-480N DAY 08 NO.DPTH 10 WND-DIR 320 WW-CODE 02  
 LON 91-050W HR 03.3 W-COLOR WND-SPD 05 CLD-TPE 5  
 MARSD SQ 262 W-TRNSP BARO 1008. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
0000	-0120	25610		2059	14307	
0010	-0109	27210		2188	14336	
0020	-0111	30821		2480	14386	
0030	-0122	31689		2550	14395	
0050	-0167	32101		2584	14383	
0075	-0164	32263		2598	14391	
0100	-0161	32456		2613	14399	
0150	-0144	32804		2641	14420	
0200	-0118	33331		2683	14448	
0270	-0033	34064		2739	14509	

## I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0120	25610		2059	14307	0000	00000	7182
0010	-0109	27210		2188	14335	0066	00003	5943
0020	-0111	30821		2480	14386	0111	00009	3158
0030	-0122	31689		2550	14395	0140	00016	2487
0050	-0167	32101		2584	14383	0187	00035	2158
0075	-0164	32263		2598	14391	0239	00069	2032
0100	-0161	32456		2613	14399	0289	00113	1883
0125	-0154	3262 C		2626	14409	0334	00165	1755
0150	-0144	32804		2641	14420	0377	00225	1616
0175	-0133	3306 C		2661	14433	0415	00289	1424
0200	-0118	33331		2683	14448	0448	00352	1218
0225	-0090	3355 G		2700	14469	0477	00415	1059
0250	-0060	3383 D		2721	14490	0501	00473	0859

C-REF-NO 340	YR 1960	DEPTH 58	WAVES 1 XX	AIR T	VIS
CONS. NO 045	MONTH 9	MXSAMPD 00	WAVES 2 XX	WET B	STN 045
LAT 69-562N	DAY 11	NO.DPTH 1	WND-DIR	WW-CODE	
LON 84-155W	HR 12.4	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT	HW

ANCHOR STATION IN CSS "BAFFIN" FOR CURRENT AND BT OBSERVATIONS

C-REF-NO 340	YR 1960	DEPTH 80	WAVES 1 02X1	AIR T	VIS 98
CONS. NO 046	MONTH 9	MXSAMPD 01	WAVES 2 XX	WET B	STN 046
LAT 69-570N	DAY 12	NO.DPTH 6	WND-DIR 020	WW-CODE 02	
LON 84-175W	HR 23.6	W-COLOR	WND-SPD 08	CLD-TPE 3	
MARSD SQ 225		W-TRNSP	BARO 1006.	CLD-AMT 5	HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0080	31491		2526	14481	
0010	0095	31398		2518	14488	
0020	0104	31620		2535	14497	
0030	0099	31708		2543	14497	
0050	0096	31826		2552	14501	
0075	0085	31851		2555	14500	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0080	31491		2526	14481	0000	00000	2717
0010	0095	31398		2518	14488	0028	00001	2795
0020	0104	31620		2535	14497	0055	00006	2631
0030	0099	31708		2543	14497	0081	00012	2561
0050	0096	31826		2552	14501	0132	00033	2469
0075	0085	31851		2555	14500	0194	00072	2443

C-REF-NO 340 YR 1960 DEPTH 141 WAVES 1 X1 AIR T VIS 98  
 CONS. NO 047 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 047  
 LAT 69-54'3N DAY 13 NO.DPTH 8 WND-DIR WW-CODE 02  
 LON 84-21'7W HR 00.2 W-COLOR WND-SPD CLD-TPE 3  
 MARSD SQ 225 W-TRNSP BARO 1006. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0070	30948		2483	14469	
0010	0082	30920		2480	14476	
0020	0080	30955		2483	14477	
0030	0089	31271		2508	14487	
0050	0111	31683		2540	14506	
0075	0069	31892		2559	14494	
0100	0028	31973		2568	14480	
0130	-0071	32157		2586	14442	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0070	30948		2483	14469	0000	00000	3127
0010	0082	30920		2480	14476	0032	00002	3153
0020	0080	30955		2483	14477	0063	00006	3125
0030	0089	31271		2508	14487	0093	00014	2888
0050	0111	31683		2540	14506	0148	00036	2586
0075	0069	31892		2559	14494	0211	00076	2403
0100	0028	31973		2568	14480	0271	00130	2320
0125	-0054	32148		2584	14449	0327	00194	2160

C-REF-NO 340 YR 1960 DEPTH 421 WAVES 1 XX AIR T -02.8 VIS 98  
 CONS. NO 048 MONTH 9 MXSAMPD 04 WAVES 2 XX WET B STN 048  
 LAT 74-253N DAY 15 NO.DPTH 12 WND-DIR WW-CODE 02  
 LUN 87-135W HR 10.5 W-COLOR WND-SPD CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 1011. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0060	29605		2380	14390	
0010	-0033	30012		2412	14410	
0020	-0084	31566		2539	14409	
0030	-0129	31986		2574	14396	
0050	-0143	32236		2595	14396	
0075	-0141	32575		2622	14406	
0100	-0133	32814		2641	14417	
0150	-0122	33280		2679	14437	
0200		33770				
0250	-0113	33881		2727	14466	
0300	-0024	34098		2741	14519	
0400	0029	34343		2758	14563	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0060	29605		2380	14390	0000	00000	4107
0010	-0033	30012		2412	14410	0040	00002	3802
0020	-0084	31566		2539	14409	0072	00007	2593
0030	-0129	31986		2574	14396	0096	00013	2257
0050	-0143	32236		2595	14396	0140	00030	2060
0075	-0141	32575		2622	14406	0188	00061	1798
0100	-0133	32' 14		2641	14417	0231	00099	1615
0125	-0127	33047		2660	14427	0270	00143	1437
0150	-0122	33280		2679	14437	0304	00191	1258
0175	-0130 C	3355 F		2701	14441	0333	00239	1050
0200	-0131 D	33770		2719	14448	0357	00286	0878
0225	-0125 C	3384 G		2724	14456	0379	00332	0823
0250	-0113	33881		2727	14466	0399	00382	0797
0300	-0024	34098		2741	14519	0436	00486	0671
0400	0029	34343		2758	14563	0496	00697	0515

C-REF-NO 340 YR 1960 DEPTH 443 WAVES 1 32X2 AIR T -02.8 VIS 95  
 CUNS. NO 049 MUNTH 9 MXSAMPD 04 WAVES 2 3242 WET B STN 049  
 LAT 74-145N DAY 15 NO.DPTH 12 WND-DIR 320 WND-CODE 02  
 LON 87-120W HR 12.3 W-COLOR WND-SPD 07 CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 1010. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0030	30414		2445	14415	
0010	-0024	30376		2441	14419	
0020	-0034	31345		2520	14430	
0030	-0113	31988		2574	14403	
0050	-0154	32194		2592	14390	
0075	-0136	32487		2615	14407	
0100	-0130	32766		2637	14418	
0150	-0130	33134		2667	14431	
0200	-0107	33715		2714	14459	
0250	-0087	33905		2728	14479	
0300	-0009	34137		2744	14526	
0400	0035	34370		2760	14566	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0030	30414	2445	14415	0000	00000	3495	
0010	-0024	30376	2441	14419	0035	00002	3525	
0020	-0034	31345	2520	14430	0067	00006	2778	
0030	-0113	31988	2574	14403	0092	00013	2260	
0050	-0154	32194	2592	14390	0136	00031	2090	
0075	-0136	32487	2615	14407	0186	00062	1867	
0100	-0130	32766	2637	14418	0230	00102	1653	
0125	-0130	3295 G	2653	14424	0270	00147	1508	
0150	-0130	33134	2667	14431	0306	00198	1368	
0175	-0120	3344 H	2691	14444	0338	00251	1139	
0200	-0107	33715	2714	14459	0364	00300	0928	
0225	-0100	3383 F	2723	14467	0386	00349	0841	
0250	-0087	33905	2728	14479	0407	00399	0789	
0300	-0009	34137	2744	14526	0443	00501	0649	
0400	0035	34370	2760	14566	0501	00705	0498	

C-REF-NO 340 YR 1960 DEPTH 476 WAVES 1 32X3 AIR T VIS 97  
 CONS. NO 050 MONTH 9 MXSAMPD 04 WAVES 2 3242 WET B STN 050  
 LAT 73-540N DAY 15 NO.DPTH 12 WND-DIR 320 WW-CODE 26  
 LON 87-110W HR 14.2 W-COLOR WND-SPD 08 CLD-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1009. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0020	30090		2418	14416
	0010	-0028	30032		2414	14413
	0020	0061	30625		2458	14464
	0030	-0056	31647		2545	14425
	0049	-0134	32272		2598	14401
	0074	-0139	32602		2624	14407
	0099	-0129	32794		2640	14419
	0141	-0129	33056		2661	14429
	0188	-0110	33574		2702	14453
	0235	-0083	33860		2724	14478
	0282	-0039	34045		2738	14508
	0376	0014	34271		2753	14551

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0020	30090		2418	14416	0000	00000	3747
0010	-0028	30032		2414	14413	0038	00002.	3788
0020	0061	30625		2458	14464	0074	00007	3368
0030	-0056	31647		2545	14425	0104	00015	2539
0050	-0135	32292		2599	14400	0149	00033	2019
0075	-0139	32611		2625	14407	0197	00063	1771
0100	-0129	32800		2640	14419	0240	00101	1627
0125	-0129	3295 D		2652	14425	0279	00147	1511
0150	-0126	3316 D		2669	14433	0315	00197	1353
0175	-0117	3343 E		2691	14446	0347	00250	1144
0200	-0104	3366 B		2709	14459	0374	00301	0969
0225	-0090	33813		2721	14472	0397	00351	0859
0250	-0069	33927		2729	14487	0417	00401	0780
0300	-0034 B	3412 C		2743	14514	0453	00502	0649

C-REF-NO 340 YR 1960 DEPTH 238 WAVES 1 32X3 AIR T -02.2 VIS 97  
 GUNS. NO 051 MONTH 9 MXSAMPD 02 WAVES 2 3242 WET B STN 051  
 LAT 73-500N DAY 15 NO.DPTH 10 WND-DIR 320 WW-CODE 26  
 LON 87-100W HR 16.1 W-COLOR WND-SPD 07 CLO-TPE 5  
 MARSD SQ 261 W-TRNSP BARO 1008. CLO-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	-0020	29283		2353	14404	
0010	-0008	29381		2361	14413	
0020	-0064	30397		2444	14403	
0030	-0040	31312		2517	14428	
0050	-0139	32013		2577	14395	
0075	-0154	32246		2596	14395	
0094	-0148	32420		2610	14404	
0141	-0142	32889		2648	14421	
0188	-0110	33473		2694	14452	
0216	-0095	33788		2719	14468	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0020	29283		2353	14404	0000	00000	4366
0010	-0008	29381		2361	14413	0043	00002	4294
0020	-0064	30397		2444	14403	0083	00008	3496
0030	-0040	31312		2517	14428	0114	00016	2801
0050	-0139	32013		2577	14395	0165	00036	2232
0075	-0154	32246		2596	14395	0219	00070	2048
0100	-0148	32475		2614	14405	0268	00114	1871
0125	-0145	32720		2634	14414	0313	00166	1682
0150	-0137	3300 B		2657	14426	0353	00221	1469
0175	-0120	3331 B		2681	14443	0387	00278	1235
0200	-0106	3359 C		2704	14457	0415	00332	1021

C-REF-NO 340	YR 1960	DEPTH	WAVES 1	34X1	AIR T -02.8	VIS 98
CONS. NO 052	MONTH 9	MXSAMPD	WAVES 2	3426	WET B	STN 052
LAT 74-263N	DAY 16	NO.DPTH	WND-DIR	340	WW-CODE 01	
LON 81-495W	HR 13.3	W-COLOR	WND-SPD	02	CLD-TPE 4	
MARSD SQ 261		W-TRNSP	BARO	996.	CLD-AMT 2	HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0010	30577		2456	14436
	0010	0061	30678		2462	14463
	0020	0101	30831		2472	14485
	0030	0050	31360		2517	14470
	0050	-0061	31984		2572	14431
	0075	-0119				
	0100	-0129	32758		2637	14418
	0150	-0122	33290		2680	14437
	0200	-0125	33694		2712	14450
	0250	-0123	33853		2725	14461
	0300	-0032	34012		2735	14514
	0400	-0003	34262		2753	14547

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0010	30577		2456	14436	0000	00000	3384
0010	0061	30678		2462	14463	0034	00002.	3328
0020	0101	30831		2472	14485	0067	00007	3231
0030	0050	31360		2517	14470	0097	00014	2801
0050	-0061	31984		2572	14431	0148	00035	2277
0075	-0119	3246 I		2612	14415	0201	00068	1895
0100	-0129	32758		2637	14418	0245	00108	1659
0125	-0127	3305 B		2660	14427	0284	00152	1437
0150	-0122	33290		2680	14437	0318	00200	1251
0175	-0123	3352 B		2698	14444	0348	00248	1077
0200	-0125	33694		2712	14450	0373	00297	0938
0225	-0130	3379 C		2720	14453	0396	00346	0862
0250	-0123	33853		2725	14461	0417	00398	0815
0300	-0032	34012		2735	14514	0456	00508	0732
0400	-0003	34262		2753	14547	0521	00737	0557

C-REF-NO 340 YR 1960 DEPTH WAVES 1 34X1 AIR T -01.1 VIS 98  
 CONS. NO 053 MONTH 9 MXSAMPD 07 WAVES 2 3426 WET B STN 053  
 LAT 74-180N DAY 16 NO.DPTH 14 WND-DIR 340 WW-CODE 01  
 LUN 81-540W HR 14.2 W-COLOR WND-SPD 03 CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 996. CLD-AMT 1 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0060	31064		2493	14466
	0010	0100	31121		2495	14486
	0020	0107	31148		2497	14492
	0030	0108	31214		2502	14495
	0050	0124	31560		2529	14510
	0075	0108	32541		2609	14520
	0100	0040	32916		2643	14499
	0150	-0105	33544		2700	14449
	0199	-0129	33694		2713	14448
	0249	-0131	33821		2723	14457
	0299	-0087	33979		2734	14488
	0398	0088	34272		2749	14589
	0598	0037	34425		2764	14601
	0748	0023	34425		2765	14619

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0060	31064		2493	14466	0000	00000	3033
0010	0100	31121		2495	14486	0030	00002	3009
0020	0107	31148		2497	14492	0061	00006	2992
0030	0108	31214		2502	14495	0090	00014	2942
0050	0124	31560		2529	14510	0147	00037	2687
0075	0108	32541		2609	14520	0205	00073	1931
0100	0040	32916		2643	14499	0250	00112	1607
0125	-0039 B	3327 0		2675	14471	0286	00154	1299
0150	-0105	33544		2700	14449	0316	00196	1062
0175	-0126 B	3365 F		2709	14445	0342	00238	0972
0200	-0129	33697		2713	14448	0366	00284	0935
0225	-0134	33760		2718	14450	0389	00334	0883
0250	-0130	33824		2723	14457	0410	00387	0834
0300	-0085	33982		2734	14489	0450	00498	0729
0400	0089	34275		2749	14589	0517	00737	0606
0500	0093 H	3440 F		2759	14610	0574	00997	0518
0600	0109 I	3448 I		2764	14634	0624	01279	0472
0700	0064 G	3446 E		2766	14631	0671	01590	0449

C-REF-NO 340 YR 1960 DEPTH 750 WAVES 1 34X2 AIR T -01.1 VIS 98  
 CONS. NO 054 MONTH 9 MXSAMPD 07 WAVES 2 3426 WET B STN 054  
 LAT 74-055N DAY 16 NO.DPTH 14 WND-DIR 280 WW-CODE 01  
 LON 81-470W HR 15.9 W-COLOR WND-SPD 10 CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 996. CLD-AMT 2 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0070	31120		2497	14471	
0010	0089	31206		2503	14483	
0020	0200	32333		2586	14549	
0030	0272	32880		2624	14590	
0049	-0005	33095		2659	14472	
0074	-0081	33356		2684	14445	
0099	-0101	33518		2697	14442	
0148	-0136	33751		2717	14437	
0188	-0138	33832		2724	14444	
0235	-0068	33988		2734	14486	
0282	-0017	34111		2742	14519	
0376	0042	34317		2755	14565	
0564	0044	34447		2766	14599	
0705	0002	34443		2768	14603	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0070	31120		2497	14471	0000	00000	2995
0010	0089	31206		2503	14483	0030	00002	2939
0020	0200	32333		2586	14549	0055	00005	2148
0030	0272	32880		2624	14590	0075	00010	1788
0050	-0012	33107		2661	14469	0108	00023	1438
0075	-0082	33364		2684	14444	0141	00044	1212
0100	-0102	33524		2698	14442	0170	00070	1081
0125	-0122	33658		2709	14438	0196	00100	0971
0150	-0137	33756		2718	14437	0219	00133	0890
0175	-0142	3381 B		2722	14439	0241	00169	0846
0200	-0123	33870		2727	14453	0262	00209	0804
0225	-0085	33953		2732	14476	0282	00252	0754
0250	-0050	34030		2737	14498	0300	00297	0711
0300	-0002	34156		2745	14530	0334	00393	0639
0400	0048	3435 B		2757	14572	0393	00601	0523
0500	0056	3443 C		2764	14593	0443	00830	0465
0600	0047 B	3448 E		2768	14607	0488	01083	0424
0700	0005	34447		2768	14604	0530	01368	0420

C-REF-NO 340 YR 1960 DEPTH WAVES 1 06X4 AIR T -01.1 VIS 98  
 CONS. NO 055 MONTH 9 MXSAMPD 05 WAVES 2 XX WET B STN 055  
 LAT 73-570N DAY 16 NO.DPTH 13 WND-DIR 250 WW-CODE 01  
 LON 81-500W HR 17.7 W-COLOR WND-SPD CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 996. CLD-AMT 2 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0120	31075		2491	14493
	0009	0101	30926		2480	14484
	0017	0097	30920		2480	14483
	0026	0100	31072		2492	14488
	0043	0080	31715		2544	14491
	0065	0129	32666		2618	14530
	0087	0019	33196		2666	14491
	0126	-0099	33526		2698	14447
	0168	-0132	33715		2714	14442
	0210	-0150	33793		2721	14441
	0252	-0154	33844		2725	14447
3	0335	-0043	34342		2762	14519
3	0504	0049	34031		2732	14585

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0120	31075		2491	14493	0000	00000.	3055
0010	0100	30918		2479	14484	0031	00002	3164
0020	0098	30954		2482	14485	0063	00006	3135
0030	0095	3120 0		2502	14488	0094	00014	2946
0050	0100 C	3203 G		2569	14505	0146	00035	2313
0075	0087 C	3295 C		2643	14516	0196	00066	1609
0100	-0030	3336 H		2682	14473	0232	00097	1237
0125	-0097	33523		2698	14448	0261	00131	1082
0150	-0125	33651		2709	14441	0287	00167	0973
0175	-0136	33733		2716	14441	0310	00207	0906
0200	-0147	33781		2720	14441	0333	00250	0864
0225	-0155	3381 B		2722	14442	0354	00296	0842
0250	-0154	33840		2725	14446	0375	00347	0813
0300	-0097 C	3413 I		2746	14486	0411	00448	0615
0400	-0041 I	3417 I		2748	14529	0473	00669	0603
0500	0045	3404 C		2733	14583	0541	00990	0753

C-REF-NO 340 YR 1960 DEPTH WAVES 1 09X4 AIR T -01.1 VIS 98  
 CONS. NO 056 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 056  
 LAT 73-470N DAY 16 NO.DPTH 7 WND-DIR 270 WW-CODE 01  
 LON 81-540W HR 19.3 W-COLOR WND-SPD CLD-TPE 4  
 MARSD SQ 261 W-TRNSP BARO 996. CLD-AMT 2 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	-0020	29559		2375	14408
	0009	-0054	29516		2373	14393
	0019	-0057	29527		2374	14394
	0028	-0028	29776		2393	14412
	0047	0120	31461		2522	14506
	0070	0125	32068		2570	14521
	0094	-0152	32337		2603	14400

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	-0020	29559		2375	14408	0000	00000	4154
0010	-0056	29509		2372	14392	0042	00002	4181
0020	-0055	29540		2375	14395	0084	00009	4156
0030	-0012 B	2994 I		2406	14422	0124	00019	3861
0050	0134	3159 H		2531	14515	0190	00044	2667
0075	0078 C	3237 I		2597	14504	0249	00081	2047

C-REF-NO 340 YR 1960 DEPTH WAVES 1 32X6 AIR T -02.8 VIS 97  
 CONS. NO 057 MONTH 9 MXSAMPD 05 WAVES 2 XX WET B STN 057  
 LAT 73-300N DAY 17 NO.DPTH 13 WND-DIR 320 WW-CODE 02  
 LON 77-000W HR 05.3 W-COLOR WND-SPD 16 CLD-TPE 5  
 MARSD SQ 260 W-TRNSP BARO 995. CLD-AMT 5 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0070	31146	2499	14472	
	0010	0087	31152	2499	14481	
	0020	0094	31154	2498	14486	
	0030	0094	31157	2499	14487	
	0049	0096	31175	2500	14492	
	0074	0117	31503	2525	14510	
	0098	0084	32050	2571	14506	
	0123	-0050	32680	2628	14458	
	0164	-0109	33268	2677	14445	
	0205	-0120	33624	2707	14452	
	0246	-0131	33815	2722	14456	
	0328	-0084	33944	2731	14494	
	0492	0053	34345	2757	14589	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0070	31146	2499	14472	0000	00000	2975	
0010	0087	31152	2499	14481	0030	00002	2979	
0020	0094	31154	2498	14486	0060	00006	2981	
0030	0094	31157	2499	14487	0090	00014	2978	
0050	0097	31182	2501	14493	0150	00038	2960	
0075	0117	31523	2527	14510	0221	00084	2711	
0100	0074	32103	2576	14503	0283	00139	2244	
0125	-0056	32718	2631	14456	0333	00195	1714	
0150	-0103	3311 D	2665	14444	0372	00250	1394	
0175	-0114	33383	2687	14446	0405	00304	1181	
0200	-0120	33591	2704	14451	0432	00357	1018	
0225	-0127	33733	2716	14454	0457	00410	0906	
0250	-0130	33825	2723	14458	0479	00463	0834	
0300	-0106	3392 E	2730	14478	0519	00577	0771	
0400	-0051	3420 I	2750	14524	0587	00817	0579	
0500	0064	3435 B	2757	14596	0643	01075	0530	

C-REF-NO 340 YR 1960 DEPTH WAVES 1 32X6 AIR T -02.8 VIS 97  
 CONS. NO 058 MONTH 9 MXSAMPD 07 WAVES 2 XX WET B STN 058  
 LAT 73-400N DAY 17 NO.DPTH 13 WND-DIR 320 WW-CODE 02  
 LON 76-220W HR 07.5 W-COLOR WND-SPD 14 CLD-TPE 5  
 MARSID SQ 260 W-TRNSP BARO 995. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0140	31297		2507	14505
0010		0178	31271		2503	14523
0020		0175	31280		2504	14524
0030		0179	31452		2517	14530
0050		-0040	32335		2600	14446
0075		-0093	32693		2630	14430
0100		-0100	32910		2648	14434
0147		-0103	33226		2674	14445
0196		-0112	33526		2698	14453
0245		-0131	33756		2718	14455
0293		-0126	33852		2725	14467
0391		-0011	34120		2742	14540
0656		0061	34444		2764	14622

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0140	31297		2507	14505	0000	00000,	2898
0010	0178	31271		2503	14523	0029	00002	2940
0020	0175	31280		2504	14524	0059	00006	2931
0030	0179	31452		2517	14530	0088	00013	2803
0050	-0040	32335		2600	14446	0136	00032	2016
0075	-0093	32693		2630	14430	0183	00062	1722
0100	-0100	32910		2648	14434	0224	00099	1552
0125	-0102	3309 8		2663	14440	0262	00142	1414
0150	-0103	33246		2675	14445	0296	00190	1291
0175	-0107	33404		2688	14450	0327	00241	1168
0200	-0114	33549		2700	14453	0355	00295	1053
0225	-0124	33674		2711	14454	0380	00350	0952
0250	-0132	33768		2719	14456	0403	00406	0876
0300	-0119	33871		2727	14472	0446	00525	0800
0400	-0052 I	3410 I		2742	14523	0519	00786	0657
0500	-0005 I	3426 I		2753	14563	0580	01066	0554
*0600	0038 E	3439 E		2761	14601	0633	01361	0485

C-REF-NU 340 YR 1960 DEPTH 760 WAVES 1 36X3 AIR T 02.2 VIS 97  
 CONS. NO 059 MONTH 9 MXSAMPD 07 WAVES 2 3446 WET B STN 059  
 LAT 74-00ON DAY 17 NO.DPTH 14 WND-DIR 020 WW-CODE 26  
 LON 75-00OW HR 11.2 W-COLOR WND-SPD 03 CLD-TPL 6  
 MARSD SQ 260 W-TRNSP BARO 995. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0290	32726		2610	14591
	0010	0308	32704		2607	14600
	0020	0308	32701		2607	14602
	0030	-0074	32991		2654	14436
	0049	-0077	33255		2675	14441
	0074	-0105	33534		2699	14436
	0098	-0122	33678		2711	14434
	0148	-0156	33789		2721	14428
	0188	-0110	33880		2727	14457
	0235	-0038	34041		2737	14501
	0282	-0029	34211		2750	14515
	0376	0084	34379		2758	14585
	0564	0058	34460		2766	14605
	0705	0047	34462		2767	14624

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTAD	POT. EN	SVA
0000	0290	32726		2610	14591	0000	00000	1917
0010	0308	32704		2607	14600	0019	00001	1949
0020	0308	32701		2607	14602	0039	00004	1952
0030	-0074	32991		2654	14436	0056	00008	1503
0050	-0078	33268		2676	14441	0085	00020	1288
0075	-0106	33542		2699	14436	0114	00038	1068
0100	-0124	33685		2712	14433	0140	00061	0951
0125	-0147 B	3375 D		2718	14428	0163	00088	0890
0150	-0155	33793		2721	14429	0185	00119	0856
0175	-0120	33848		2725	14446	0206	00154	0820
0200	-0090	33918		2729	14470	0226	00193	0780
0225	-0051	34004		2735	14493	0245	00234	0731
0250	-0033	34098		2742	14506	0263	00277	0667
0300	-0009 B	3426 B		2753	14528	0294	00364	0560
0400	0090 B	3440 B		2759	14591	0348	00557	0511
0500	0085 D	3446 C		2764	14607	0397	00785	0468
0600	0095 H	3450 F		2766	14628	0444	01047	0448
0700	0050	34465		2767	14624	0489	01346	0438

C-REF-NO 340 YR 1960 DEPTH 690 WAVES 1 36X3 AIR T -00.6 VIS 97  
 CONS. NO 060 MONTH 9 MXSAMPD 05 WAVES 2 3646 WET B STN 060  
 LAT 74-165N DAY 17 NO.DPTH 13 WND-DIR 020 WW-CODE 26  
 LON 73-440W HR 14.4 W-COLOR WND-SPD 09 CLD-TPE 6  
 MARSD SQ 260 W-TRNSP BARO 995. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0280	32455		2590	14583	
0010	0292	32406		2585	14589	
0020	0303	32516		2593	14597	
0029	-0046	33488		2693	14456	
0049	-0118	33674		2711	14428	
0073	-0143	33749		2717	14421	
0098	-0154	33786		2721	14421	
0134	-0145	33832		2724	14431	
0178	-0047	33972		2732	14486	
0223	0003	34096		2740	14519	
0267	0054	34211		2746	14551	
0357	0140	34409		2756	14607	
0535	0109	34466		2763	14623	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0280	32455		2590	14583	0000	00000.	2114
0010	0292	32406		2585	14589	0022	00001	2161
0020	0303	32516		2593	14597	0043	00004	2088
0030	-0062 C	3353 G		2697	14449	0059	00008	1094
0050	-0120	33679		2711	14427	0080	00017	0959
0075	-0144	33753		2718	14421	0103	00031	0894
0100	-0155	33788		2721	14421	0125	00051	0863
0125	-0152	33818		2723	14427	0147	00076	0839
0150	-0112 B	3388 B		2727	14450	0167	00105	0804
0175	-0054	33961		2731	14482	0187	00138	0763
0200	-0020	34034		2736	14504	0206	00174	0724
0225	0005	34101		2740	14520	0224	00213	0685
0250	0035	34168		2744	14538	0240	00254	0651
0300	. 0091	34293		2750	14574	0272	00342	0593
0400	0145 B	3445 C		2759	14617	0328	00542	0519
0500	0131	3448 B		2763	14627	0378	00776	0483

C-REF-NO 340 YR 1960 DEPTH WAVLS 1 33X3 AIR T 01.7 VIS 98  
 CONS. NO 061 MONTH 9 MXSAMPD 07 WAVES 2 3386 WET B STN 061  
 LAT 74-520N DAY 17 ND.DPTH 14 WND-DIR 320 WW-CODE 02  
 LON 71-070W HR 20.6 W-COLOR WND-SPD 09 CLD-TPE 6  
 MARSD SQ 260 W-TRNSP BARO 995. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0190	32809		2625	14548
	0010	0204	32770		2621	14556
	0020	0198	32777		2622	14555
	0030	-0083	33404		2688	14437
	0050	-0155	33604		2706	14410
	0075	-0158	33703		2714	14414
	0100	-0148	33760		2718	14423
	0150	-0153	33816		2723	14430
	0200	-0072	33909		2728	14478
	0250	0014	34057		2736	14528
	0300	0080	34212		2745	14568
	0400	0144	34409		2756	14616
	0600	0120	34489		2764	14639
	0750	0069	34467		2766	14641

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0190	32809		2625	14548	0000	00000	1780
0010	0204	32770		2621	14556	0018	00001	1819
0020	0198	32777		2622	14555	0036	00004	1810
0030	-0083	33404		2688	14437	0051	00007	1183
0050	-0155	33604		2706	14410	0074	00016	1007
0075	-0158	33703		2714	14414	0098	00032	0928
0100	-0148	33760		2718	14423	0121	00052	0886
0125	-0154 B	3379 B		2721	14425	0143	00078	0859
0150	-0153	33816		2723	14430	0164	00108	0838
0175	-0118	33857		2725	14451	0185	00143	0817
0200	-0072	33909		2728	14478	0205	00182	0795
0225	-0028	33979		2732	14503	0225	00225	0761
0250	0014	34057		2736	14528	0244	00270	0724
0300	0080	34212		2745	14568	0278	00367	0647
0400	0144	34409		2756	14616	0338	00581	0546
0500	0148 B	3448 D		2762	14635	0391	00824	0496
0600	0120	34489		2764	14639	0440	01100	0472
0700	0100 B	3450 D		2767	14647	0487	01410	0448

C-REF-NO 340 YR 1960 DEPTH 1875 WAVES 1 XX AIR T -01.1 VIS 97  
 CONS. NO 062 MONTH 9 MXSAMPD 17 WAVES 2 3326 WET B STN 062  
 LAT 73-560N DAY 18 NO.DPTH 18 WND-DIR 360 WW-CODE 02  
 LON 69-000W HR 03.9 W-COLOR WND-SPD 10 CLD-TPE 6  
 MARSD SQ 259 W-TRNSP BARO 998. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0350	32359		2576	14612	
0010	0403	32186		2557	14634	
0020	-0022	33385		2684	14464	
0030	-0133	33478		2695	14415	
0050	-0155	33643		2709	14410	
0075	-0158	33742		2717	14414	
0097	-0154	33763		2719	14420	
0145	-0132	33840		2724	14440	
0193	-0049	33984		2733	14488	
0242	0036	34147		2742	14537	
0290	0085	34267		2749	14569	
0387	0130	34418		2758	14608	
0574	0117	34478		2764	14634	
0766	0072	34476		2766	14645	
0956	0044	34473		2768	14664	
1196	0000	34484		2771	14685	
1435	-0024	34481		2772	14714	
1721	-0032	34478		2772	14759	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0350	32359		2576	14612	0000	00000	2245
0010	0403	32186		2557	14634	0023	00001	2424
0020	-0022	33385		2684	14464	0042	00004	1222
0030	-0133	33478		2695	14415	0054	00007	1111
0050	-0155	33643		2709	14410	0075	00015	0977
0075	-0158	33742		2717	14414	0098	00030	0898
0100	-0154	33766		2719	14421	0121	00050	0879
0125	-0146	33801		2722	14429	0143	00076	0853
0150	-0125	33853		2725	14444	0164	00105	0819
0175	-0084	33925		2730	14468	0184	00139	0778
0200	-0036	34008		2734	14496	0203	00176	0736
0225	0008	34092		2739	14521	0221	00215	0694
0250	0046	34169		2743	14544	0238	00256	0657
0300	0092	34287		2750	14574	0270	00346	0598
0400	0132	34428		2759	14611	0326	00547	0522
0500	0132 B	3448 C		2762	14628	0377	00782	0489
0600	0111	34460		2764	14635	0426	01057	0472
0700	0088	34480		2766	14642	0473	01370	0455

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0067	34475		2767	14649	0518	01721	0444
1000	0036	34475		2768	14668	0605	02528	0420
1200	-0001	34484		2771	14685	0687	03448	0384
1500	-0029	34483		2772	14723	0800	05013	0358

C-REF-NO 340 YR 1960 DEPTH 1134 WAVES 1 35X3 AIR T -01.1 VIS 98  
 CONS. NO 063 MONTH 9 MXSAMPD 09 WAVES 2 3246 WET B STN 063  
 LAT 73-280N DAY 18 NO.DPTH 13 WND-DIR 340 WW-CODE 02  
 LUN 71-350W HR 10.3 W-COLOR WND-SPD 04 CLD-TPE 6  
 MARSD SQ 260 W-TRNSP BARO 1000. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0170	31399		2514	14520
	0010	0207	31365		2508	14538
	0020	0208	31402		2511	14540
	0030	-0027	32333		2599	14448
	0050	-0058	32708		2630	14443
	0075	-0129	32941		2652	14417
	0100	-0124	33147		2668	14426
	0150	-0119	33555		2701	14442
	0200	-0152	33772		2720	14438
	0300	-0043	34012		2735	14509
	0500	0067	34376		2759	14597
	0700	0093	34479		2765	14644
	0950	0089	34458		2764	14683

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0170	31399		2514	14520	0000	00000	2838
0010	0207	31365		2508	14538	0029	00001	2888
0020	0208	31402		2511	14540	0058	00006	2860
0030	-0027	32333		2599	14448	0082	00012	2024
0050	-0058	32708		2630	14443	0120	00027	1724
0075	-0129	32941		2652	14417	0161	00053	1521
0100	-0124	33147		2668	14426	0197	00085	1363
0125	-0119	3336 C		2685	14436	0229	00122	1197
0150	-0119	33555		2701	14442	0258	00162	1049
0175	-0137 B	3368 B		2712	14440	0283	00204	0946
0200	-0152	33772		2720	14438	0306	00248	0869
0225	-0134 C	3385 B		2725	14452	0327	00294	0817
0250	-0110 D	3391 C		2729	14468	0347	00343	0776
0300	-0043	34012		2735	14509	0385	00450	0727
0400	0026	3422 B		2748	14560	0452	00689	0606
0500	0067	34376		2759	14597	0509	00949	0516
0600	0087	3445 B		2763	14624	0559	01231	0475
0700	0093	34479		2765	14644	0606	01547	0460
0800	0108 B	3452 E		2768	14668	0652	01898	0442

C-REF-NO 340 YR 1960 DEPTH 914 WAVES 1 35X3 AIR T 00.0 VIS 98  
 CONS. NO 064 MONTH 9 MXSAMPC 08 WAVES 2 3346 WET B STN 064  
 LAT 73-100N DAY 18 NO.DPTH 15 WND-DIR 330 WW-CODE 02  
 LON 73-110W HR 14.9 W-COLOR WND-SPD 05 CLD-TPE 6  
 MARSD SQ 260 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0200	31214		2497	14531	
0010	0212	31181		2493	14537	
0019	0162	31618		2532	14523	
0030	0126	31976		2562	14513	
0049	-0030	32378		2603	14451	
0074	-0092	32816		2640	14432	
0098	-0109	33079		2662	14432	
0148	-0119	33476		2695	14441	
0188	-0131	33705		2713	14445	
0235	-0149	33810		2723	14446	
0282	-0104	33920		2730	14476	
0376	0012	34190		2747	14549	
0564	0056	34402		2761	14603	
0752	0061	34438		2764	14638	
0846	0039	34439		2765	14643	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0200	31214	2497	14531	0000	00000	2998	
0010	0212	31181	2493	14537	0030	00002	3031	
0020	0159	31656	2535	14522	0059	00006	2635	
0030	0126	31976	2562	14513	0084	00012	2372	
0050	-0034	32398	2605	14449	0128	00030	1970	
0075	-0093	32829	2641	14432	0173	00058	1618	
0100	-0110	33098	2664	14432	0211	00092	1405	
0125	-0116	33314	2681	14436	0244	00130	1236	
0150	-0120	33490	2696	14441	0274	00171	1099	
0175	-0127	33642	2708	14444	0300	00215	0979	
0200	-0138	3374 B	2717	14444	0323	00260	0898	
0225	-0148	3380 B	2721	14445	0346	00308	0852	
0250	-0139	33844	2725	14454	0367	00360	0816	
0300	-0081	3397 B	2733	14491	0406	00470	0738	
0400	0026 B	3423 B	2750	14560	0473	00708	0595	
0500	0057 C	3436 C	2758	14593	0529	00966	0518	
0600	0061	34417	2762	14612	0580	01251	0481	
0700	0065	3444 B	2764	14631	0628	01571	0468	
0800	0050	3445 B	2765	14641	0674	01929	0450	

C-REF-NO 340 YR 1960 DEPTH 677 WAVES 1 35X3 AIR T 00.0 VIS 98  
 CONS. NO 065 MONTH 9 MXSAMPD 06 WAVES 2 XX WET B STN 065  
 LAT 72-400N DAY 18 NO.DPTH 13 WND-DIR 360 WW-CODE 02  
 LON 74-090W HR 18.8 W-COLOR WND-SPD 04 CLD-TPE 5  
 MARSID SQ 260 W-TRNSP BARO 1002. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0200	31169		2493	14530	
0010	0206	31116		2488	14534	
0020	-0045	32331		2600	14438	
0030	-0113	32678		2630	14413	
0050	-0126	32964		2653	14414	
0075	-0120	33210		2673	14425	
0100	-0120	33397		2688	14431	
0150	-0137	33768		2719	14437	
0200	-0073	33953		2732	14478	
0250	-0002	34136		2743	14521	
0300	0020	34255		2752	14541	
0400	0047	34362		2759	14572	
0640	0035	34447		2766	14607	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT-EN	SVA
0000	0200	31169		2493	14530	0000	00000	3032
0010	0206	31116		2488	14534	0031	00002	3076
0020	-0045	32331		2600	14438	0056	00005	2019
0030	-0113	32678		2630	14413	0075	00010	1730
0050	-0126	32964		2653	14414	0108	00023	1506
0075	-0120	33210		2673	14425	0143	00046	1317
0100	-0120	33397		2688	14431	0175	00074	1172
0125	-0132 B	3359 C		2705	14433	0202	00105	1016
0150	-0137	33768		2719	14437	0226	00139	0880
0175	-0111	3387 C		2726	14455	0247	00174	0808
0200	-0073	33953		2732	14478	0267	00212	0761
0225	-0035	34049		2738	14501	0286	00252	0705
0250	-0002	34136		2743	14521	0303	00294	0655
0300	0020	34255		2752	14541	0334	00381	0576
0400	0047	34362		2759	14572	0389	00577	0512
0500	0056	3447 G		2767	14594	0437	00798	0438
0600	0045	3447 C		2767	14605	0481	01046	0431

C-REF-NO 340 YR 1960 DEPTH WAVES 1 34X1 AIR T -00.6 VIS 97  
 CONS. NO 066 MONTH 9 MXSAMPD 02 WAVES 2 3226 WET B STN 066  
 LAT 72-31'S DAY 18 NO.DPTH 8 WND-DIR 340 WW-CODE 02  
 LON 74-39'W HR 20.8 W-COLDR WND-SPD 05 CLD-TPE 5  
 MARSD SQ 260 W-TRNSP BARO 1003. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0220	31110		2487	14538	
0010	0230	31077		2484	14544	
0020	0229	31083		2484	14545	
0030	0069	31958		2564	14487	
0050	-0101	32536		2618	14420	
0075	-0120	32819		2641	14419	
0100	-0130	32996		2656	14421	
0160	-0121	33496		2696	14442	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0220	31110		2487	14538	0000	00000	3090
0010	0230	31077		2484	14544	0031	00002	3122
0020	0229	31083		2484	14545	0063	00006	3117
0030	0069	31958		2564	14487	0090	00013	2354
0050	-0101	32536		2618	14420	0132	00030	1841
0075	-0120	32819		2641	14419	0176	00058	1617
0100	-0130	32996		2656	14421	0215	00092	1477
0125	-0132	33246		2676	14428	0250	00132	1287
0150	-0126	33436		2691	14437	0280	00175	1144

C-REF-NO 340 YR 1960 DEPTH 188 WAVES 1 32X3 AIR T 00.0 VIS 98  
 CONS. NO 067 MONTH 9 MXSAMPD 02 WAVES 2 XX WET B STN 067  
 LAT 71-310N DAY 19 NO.DPTH 8 WND-DIR 320 WW-CODE 02  
 LON 70-510W HR 06.1 W-COLOR WND-SPD 06 CLD-TPE 5  
 MARSQ 260 W-TRNSP BARO 1003. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0370	30889			2457	14601
0010	0376	30883			2456	14605
0020	0368	30942			2462	14604
0030	0024	32089			2577	14468
0050	-0110	32514			2617	14416
0075	-0136	32682			2631	14410
0100	-0138	32754			2637	14414
0170	-0139	33204			2673	14431

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0370	30889		2457	14601	0000	00000	3373
0010	0376	30883		2456	14605	0034	00002	3383
0020	0368	30942		2462	14604	0068	00007	3332
0030	0024	32089		2577	14468	0096	00014	2232
0050	-0110	32514		2617	14415	0137	00030	1855
0075	-0136	32682		2631	14410	0182	00059	1717
0100	-0138	32754		2637	14414	0224	00097	1660
0125	-0150 B	3294 I		2652	14415	0264	00143	1512
0150	-0147	3309 E		2664	14423	0301	00194	1399
*0175	-0136	3323 B		2675	14434	0335	00251	1288

C-REF-NO 340 YR 1960 DEPTH WAVES 1 03X3 AIR T 00.0 VIS 93  
 CONS. NO 068 MONTH 9 MXSAMPD 07 WAVES 2 0346 WET B STN 068  
 LAT 71-400N DAY 19 NO.DPTH 14 WND-DIR 020 WW-CODE 75  
 LON 70-230W HR 08.3 W-COLOR WND-SPD 06 CLD-TPE  
 MARSD SQ 260 W-TRNSP BARO 1003. CLD-ANT 8 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0430	30962		2457	14627
	0010	0458	30922		2452	14640
	0020	0459	30935		2452	14642
	0030	0087	32213		2584	14499
	0050	-0122	32755		2636	14413
	0075	-0116	33031		2659	14424
	0100	-0126	33263		2678	14427
	0148	-0149	33540		2701	14428
	0197	-0151	33784		2720	14438
	0246	-0136	33847		2725	14454
	0295	-0045	34008		2735	14507
	0394	0049	34290		2753	14571
	0591	0053	34441		2765	14607
	0720	0040	34455		2767	14623

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGM1	SOUND	DELTA-D	POT. EN	SVA
0000	0430	30962		2457	14627	0000	00000	3372
0010	0458	30922		2452	14640	0034	00002	3429
0020	0459	30935		2452	14642	0069	00007	3421
0030	0087	32213		2584	14499	0097	00014	2169
0050	-0122	32755		2636	14413	0135	00029	1667
0075	-0116	33031		2659	14424	0175	00054	1456
0100	-0126	33263		2678	14427	0209	00085	1273
0125	-0139	3342 C		2691	14427	0239	00120	1145
0150	-0149	33552		2702	14428	0267	00158	1042
0175	-0152	3369 B		2713	14433	0292	00200	0935
0200	-0151	33789		2721	14439	0315	00243	0856
0225	-0148	3383 D		2724	14445	0336	00289	0828
0250	-0129	33859		2726	14458	0356	00340	0808
0300	-0038	34025		2736	14511	0395	00448	0719
0400	0051	34300		2753	14573	0460	00677	0562
0500	0068 C	3442 E		2762	14598	0513	00920	0487
0600	0077 E	3449 I		2767	14620	0559	01183	0439
0700	0049	3447 B		2767	14624	0604	01479	0434

C-REF-NO 340 YR 1960 DEPTH 1884 WAVES 1 01X3 AIR T 00.0 VIS 98  
 CONS. NO 069 MONTH 9 MXSAMPD 18 WAVES 2 3646 WET B STN 069  
 LAT 71-543N DAY 19 NO.DPTH 18 WND-DIR 010 WW-CODE  
 LON 69-220W HR 12.1 W-COLOR WND-SPD 08 CLD-TPE 6  
 MARSD SQ 259 W-TRNSP BARO 1003. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0300	31025		2474	14572
	0010	0335	30993		2469	14589
	0020	0151	31968		2560	14523
	0030	-0073	32611		2623	14431
	0050	-0119	32952		2652	14417
	0075	-0120	33172		2670	14424
	0100	-0147	33366		2686	14418
	0150	-0156	33651		2710	14426
	0200	-0159	33793		2721	14435
	0250	-0120	33878		2727	14463
	0300	-0034	34045		2737	14514
	0400	0032	34254		2751	14563
	0600	0109	34470		2764	14634
	0800	0064	34480		2767	14647
	1000	0047	34483		2768	14673
	1250	-0001	34468		2770	14693
	1500	-0024	34474		2771	14725
	1800	-0034	34474		2772	14772

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0300	31025		2474	14572	0000	00000	3213
0010	0335	30993		2469	14589	0033	00002	3265
0020	0151	31968		2560	14523	0061	00006	2393
0030	-0073	32611		2623	14431	0082	00011	1794
0050	-0119	32952		2652	14417	0115	00024	1517
0075	-0120	33172		2670	14424	0151	00047	1346
0100	-0147	33366		2686	14418	0183	00076	1188
0125	-0156	33526		2700	14421	0212	00108	1061
0150	-0156	33651		2710	14426	0237	00144	0964
0175	-0161	33735		2717	14430	0261	00183	0897
0200	-0159	33793		2721	14435	0283	00226	0851
0225	-0145	3383 B		2724	14447	0304	00272	0823
0250	-0120	33878		2727	14463	0324	00321	0797
0300	-0034	34045		2737	14514	0362	00428	0706
0400	0032	34254		2751	14563	0427	00659	0584
0500	0083	34392		2759	14605	0483	00914	0515
0600	0109	34470		2764	14634	0533	01197	0478
0700	0092 B	3449 C		2766	14644	0580	01511	0453

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0064	34480		2767	14648	0625	01858	0438
1000	0047	34483		2768	14673	0712	02664	0423
1200	0009	34471		2770	14690	0796	03609	0401
1500	-0024	34474		2771	14725	0913	05231	0369

C-REF-NO 340 YR 1960 DEPTH 2241 WAVES 1 01X3 AIR T 01.1 VIS 98  
 CONS. NO 070 MONTH 9 MXSAMPD 22 WAVES 2 3546 WET B STN 070  
 LAT 72-125N DAY 19 NO.DPTH 19 WND-DIR 010 WW-CODE 72  
 LON 68-055W HR 16.5 W-COLOR WND-SPD CLD-TPE 6  
 MARSID SQ 259 W-TRNSP BARO 1004. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0420	30603		2430	14618	
0010	0436	30746		2440	14628	
0020	0071	32078		2574	14488	
0030	-0077	32468		2612	14427	
0050	-0102	32891		2647	14425	
0075	-0117	33118		2666	14425	
0100	-0156	33335		2684	14414	
0149	-0150	33637		2709	14429	
0199	-0146	33776		2720	14441	
0249	-0104	33882		2727	14470	
0299	-0014	34083		2739	14523	
0399	0061	34286		2752	14577	
0600	0127	34471		2762	14642	
0800	0095	34482		2765	14661	
1000	0052	34475		2767	14675	
1250	0011	34463		2769	14699	
1500	-0022	34457		2770	14726	
2000	-0034	34479		2772	14806	
2200	-0031	34474		2772	14841	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0420	30603		2430	14618	0000	00000	3633
0010	0436	30746		2440	14628	0036	00002	3541
0020	0071	32078		2574	14488	0065	00006	2264
0030	-0077	32468		2612	14427	0086	00011	1902
0050	-0102	32891		2647	14425	0121	00025	1569
0075	-0117	33118		2666	14425	0158	00049	1389
0100	-0156	33335		2684	14414	0191	00078	1209
0125	-0160	33510		2698	14419	0220	00111	1073
0150	-0150	33641		2709	14429	0246	00147	0973
0175	-0150	3372	8	2715	14434	0269	00187	0910
0200	-0146	33778		2720	14441	0292	00230	0867
0225	-0130	3383	8	2723	14454	0313	00276	0833
0250	-0102	33886		2727	14471	0334	00327	0798
0300	-0013	34086		2740	14524	0371	00432	0686
0400	0062	34288		2752	14577	0435	00658	0578
0500	0107	3441	8	2759	14616	0491	00914	0521
0600	0127	34471		2762	14642	0542	01202	0491

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0700	0118	3449	B	2764	14655	0590	01528	0473
0800	0095	34482		2765	14661	0638	01892	0461
1000	0052	34475		2767	14676	0728	02728	0433
1200	0018	34465		2769	14694	0814	03698	0413
1500	-0022	34457		2770	14726	0935	05377	0383
2000	-0034	34479		2772	14806	1121	08710	0349

C-REF-NO 340 YR 1960 DEPTH 2377 WAVES 1 X1 AIR T -01.7 VIS 96  
 CONS. NO 071 MONTH 9 MXSAMPD 22 WAVES 2 3646 WET-B STN 071  
 LAT 72-47N DAY 19 NO.DPTH 17 WND-DIR WW-CODE  
 LON 65-35W HR 23.0 W-COLOR WND-SPD CLD-TPE  
 MARSQ SQ 259 W-TRNSP BARO 1002. CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0290	31476		2511	14574	
0010	0328	31987		2548	14599	
0020	0297	31607		2521	14582	
0030	-0086	32451		2611	14423	
0050	-0140	32659		2629	14403	
0074	-0122	32930		2651	14420	
0099	-0140	33177		2671	14419	
0149	-0127	33515		2698	14438	
0198	-0146	33735		2716	14440	
0298	-0023					
0300	-0005	34075		2738	14527	
0400	0164	34333		2749	14624	
0600	0124	34458		2762	14641	
0800	0095	34477		2765	14661	
1000	0056	34468		2767	14677	
1500	-0019	34456		2770	14727	
2200	-0035	34475		2772	14840	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0290	31476		2511	14574	0000	00000	2864
0010	0328	31987		2548	14599	0027	00001	2508
0020	0297	31607		2521	14582	0054	00005	2770
0030	-0086	32451		2611	14423	0077	00011	1912
0050	-0140	32659		2629	14403	0114	00026	1736
0075	-0123	32941		2651	14420	0155	00052	1523
0100	-0140	33185		2672	14419	0191	00084	1329
0125	-0135 B	3337 B		2687	14428	0222	00120	1185
0150	-0127	33520		2698	14438	0251	00160	1073
0175	-0138	33641		2709	14439	0277	00203	0975
0200	-0144	33743		2717	14442	0300	00249	0894
0225	-0115	33837		2724	14461	0322	00296	0831
*0250	-0084	33923		2730	14481	0342	00345	0777
0300	-0005	34075		2738	14527	0380	00450	0699
0400	0164	34333		2749	14624	0446	00687	0619
0500	0175 G	3444 F		2756	14646	0505	00960	0555
0600	0124	34458		2762	14641	0559	01259	0498
0700	0109	34476		2764	14651	0608	01588	0476
0800	0095	34477		2765	14661	0655	01955	0465

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
1000	0056	34468		2767	14677	0747	02803	0442
1200	0021	34461		2768	14695	0834	03788	0419
1500	-0019	34456		2770	14727	0957	05485	0386
2000	-0039	34466		2771	14804	1145	08858	0354

C-REF-NO 340 YR 1960 DEPTH WAVES 1 32X4 AIR T 00.6 VIS 98  
 CONS. NO 072 MONTH 9 MXSAMPD 08 WAVES 2 XX WET 8 STN 072  
 LAT 71-410N DAY 20 NO.DPTH 13 WND-DIR 320 WW-CODE 02  
 LON 64-300W HR 07.2 W-COLOR WND-SPD 12 CLD-TPE 5  
 MARSD SQ 259 W-TRNSP BARD 1007. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0350				
	0010	0457	30543		2422	14634
	0020	0081	32382		2598	14497
	0029	-0021	32555		2617	14454
	0049	-0127	32855		2645	14412
	0074	-0141	33047		2661	14412
	0098	-0146	33263		2678	14417
	0139	-0148	33493		2697	14426
	0185	-0141	33711		2714	14440
	0278	-0044	33996		2734	14505
	0375	0063	34269		2750	14573
	0575	0095	34435		2762	14623
	0776	0079	34497		2768	14650

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0350	2833 G		2256	14558	0000	00000	5297
0010	0457	30543		2422	14634	0045	00002	3714
0020	0081	32382		2598	14497	0074	00006	2038
0030	-0029	32573		2618	14451	0094	00011	1839
0050	-0129	32864		2645	14412	0128	00025	1581
0075	-0141	33056		2661	14413	0166	00049	1429
0100	-0146	33277		2679	14417	0200	00079	1257
0125	-0148	3343 B		2691	14423	0230	00114	1140
0150	-0148	33549		2701	14429	0258	00152	1044
0175	-0144	33668		2711	14436	0283	00194	0953
0200	-0129	3377 B		2718	14449	0306	00239	0882
0225	-0106 B	3385 C		2724	14465	0327	00285	0826
*0250	-0079 B	3392 B		2729	14483	0348	00335	0779
0300	-0017	34065		2738	14522	0385	00440	0700
0400	0075 B	3431 C		2753	14584	0449	00667	0572
0500	0101 C	3441 F		2759	14613	0504	00920	0514
0600	0127 G	3451 I		2766	14643	0553	01197	0459
0700	0112 D	3453 H		2768	14653	0599	01499	0437

C-REF-NO 340 YR 1960 DEPTH WAVES 1 32X2 AIR T 00.6 VIS 93  
 CONS. NO 073 MONTH 9 MXSAMPD 07 WAVES 2 3246 WET B STN 073  
 LAT 71-175N DAY 20 NO.DPTH 13 WND-DIR 320 WW-CODE 75  
 LON 62-300W HR 11.8 W-COLOR WND-SPD 13 CLD-TPE  
 MARSD SQ 259 W-TRNSP BARO 1007. CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000		0435				
0010		0465	30793		2441	14641
0020		0027	32431		2604	14473
0030		-0125	32648		2628	14407
0050		-0156	32895		2649	14399
0075		-0158	33044		2661	14404
0100		-0154	33253		2678	14413
0150		-0164	33539		2701	14421
0200		-0164	33641		2709	14431
0300		-0093	33876		2726	14484
0400		0099	34248		2746	14593
0600		0176	34500		2761	14664
0700		0104	34468		2764	14649

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT-EN	SVA
0000	0435	2884 I		2289	14601	0000	00000.	4980
0010	0465	30793		2441	14641	0043	00002	3533
0020	0027	32431		2604	14473	0070	00006	1973
0030	-0125	32648		2628	14407	0089	00010	1750
0050	-0156	32895		2649	14399	0122	00024	1551
0075	-0158	33044		2661	14404	0160	00048	1434
0100	-0154	33253		2678	14413	0194	00078	1273
0125	-0158	33419		2691	14418	0225	00113	1143
0150	-0164	33539		2701	14421	0252	00152	1047
0175	-0166	3360 C		2706	14425	0278	00195	0998
0200	-0164	33641		2709	14431	0303	00242	0966
0225	-0156	33691		2713	14439	0327	00294	0928
0250	-0142	3375 B		2717	14451	0349	00350	0888
0300	-0093	33876		2726	14484	0392	00471	0807
0400	0099	34248		2746	14593	0465	00728	0634
0500	0181 B	3444 C		2756	14649	0525	01003	0555
0600	0176	34500		2761	14664	0579	01307	0510
0700	0104	34468		2764	14649	0629	01640	0477

C-REF-NO 340 YR 1960 DEPTH 2158 WAVES 1 32X2 AIR T 01.1 VIS 97  
 CONS. NO 074 MONTH 9 MXSAMPD 21 WAVES 2 3246 WET B STN 074  
 LAT 71-030N DAY 20 NO.DPTH 16 WND-DIR 290 WW-CODE 83  
 LON 62-450W HR 15.6 W-COLOR WND-SPD 05 CLD-TPE 8  
 MARSD SQ 259 W-TRNSP BARO 1008. CLD-AMT 4 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000		0455				
0010		0481	31268		2477	14654
0020		0573	32294		2547	14707
0030		0000	32698		2627	14466
0050		-0102	33002		2656	14426
0075		-0150	33200		2673	14410
0100		-0155	33393		2689	14415
0150		-0145	33673		2711	14432
0200		-0140	33784		2720	14444
0274		-0010	34039		2736	14520
0367		0070	34278		2751	14575
0556		0119	34450		2761	14631
0748		0103	34488		2765	14656
0941		0060	34482		2768	14669
1422		-0013	34472		2771	14717
2054		-0033	34484		2773	14816

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0455	2999 I		2378	14625	0000	00000	4129
0010	0481	31268		2477	14654	0037	00002	3191
0020	0573	32294		2547	14707	0065	00006	2519
0030	0000	32698		2627	14466	0087	00011	1756
0050	-0102	33002		2656	14426	0120	00024	1484
0075	-0150	33200		2673	14410	0155	00047	1316
0100	-0155	33393		2689	14415	0186	00074	1165
0125	-0151	33552		2702	14423	0214	00106	1042
0150	-0145	33673		2711	14432	0239	00142	0950
0175	-0146	3374 C		2716	14436	0262	00181	0900
0200	-0140	33784		2720	14444	0285	00223	0864
0225	-0101 C	3387 B		2726	14468	0306	00269	0813
0250	-0057 C	3395 B		2731	14493	0326	00318	0766
0300	0019	34116		2740	14539	0362	00421	0681
0400	0086	3433 B		2754	14589	0425	00644	0564
0500	0116	3443 C		2760	14620	0480	00894	0512
0600	0119	34467		2763	14639	0530	01179	0488
0700	0111	34487		2765	14652	0578	01503	0469
0800	0092	34489		2766	14660	0625	01862	0454
1000	0048	34480		2768	14674	0714	02686	0427

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
1200	0015	34475		2770	14692	0798	03636	0403
1500	-0020	34474		2771	14727	0916	05270	0372
2000	-0035	34482		2773	14806	1099	08547	0346

C-REF-NO 340 YR 1960 DEPTH 2012 WAVES 1 32X4 AIR T 01.1 VIS 98  
 CONS. NO 075 MONTH 9 MXSAMPD 08 WAVES 2 XX WET B STN 075  
 LAT 70-445N DAY 20 NO.DPTH 15 WND-DIR 320 WW-CODE 02  
 LON 63-500W HR 19.3 W-COLOR WND-SPD 11 CLD-TPE 6  
 MARSD SQ 259 W-TRNSP BARO CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000	0450					
0010	0452	30776		2441	14635	
0020	0101	32416		2599	14506	
0030	-0033	32721		2631	14451	
0050	-0149	33003		2657	14404	
0075	-0152	33181		2672	14409	
0100	-0147	33363		2686	14418	
0150	-0143	33607		2706	14432	
0196	-0141	33751		2718	14442	
0295	-0027	34055		2738	14516	
0393	0050					
0590	0124	34472		2763	14639	
0782	0086	34484		2766	14654	
0787	0086	34479		2766	14655	
0792	0086	34481		2766	14656	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0450	2880 I		2284	14607	0000	00000	5025
0010	0452	30776		2441	14635	0043	00002	3533
0020	0101	32416		2599	14506	0071	00006	2023
0030	-0033	32721		2631	14451	0090	00010	1725
0050	-0149	33003		2657	14404	0122	00023	1470
0075	-0152	33181		2672	14409	0157	00046	1330
0100	-0147	33363		2686	14418	0189	00074	1190
0125	-0144	33501		2697	14426	0218	00107	1084
0150	-0143	33607		2706	14432	0244	00144	1001
0175	-0144	33690		2713	14437	0268	00185	0936
0200	-0137	33764		2718	14445	0291	00229	0880
0225	-0113 B	33845		2724	14461	0313	00275	0826
*0250	-0086 C	33922		2730	14480	0333	00325	0777
0300	-0022	34067		2739	14519	0370	00429	0695
0400	0055	3427 C		2751	14574	0435	00659	0584
0500	0104	3441 C		2759	14615	0490	00914	0518
0600	0120 B	3447 B		2763	14639	0541	01200	0485
0700	0094 I	3448 I		2765	14644	0589	01519	0462

C-REF-NO 340 YR 1960 DEPTH WAVES 1 34X1 AIR T 00.6 VIS 97  
 CONS. NO 076 MONTH 9 MXSAMPD 08 WAVES 2 3426 WET B STN 076  
 LAT 70-245N DAY 20 NO.DPTH 13 WND-DIR 350 WW-CODE 03  
 LON 65-160W HR 23.6 W-COLOR WND-SPD 03 CLD-TPE 6  
 MARSD SQ 259 W-TRNSP BARO 1012. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0300					
0010	0293	30158		2406	14559	
0020	-0066	32016		2575	14424	
0030	-0025	32351		2600	14450	
0050	-0109	32683		2630	14418	
0075	-0133	32953		2653	14415	
0100	-0143	33171		2671	14417	
0150	-0152	33456		2694	14425	
0200	-0142	33699		2713	14442	
0300	-0024	34073		2739	14519	
0400	0048	34283		2752	14571	
0600	0080	34443		2763	14621	
0800	0071	34478		2767	14651	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTÄ-D	POT.EN	SVA
0000	0300	2792 I		2228	14530	0000	00000	5567
0010	0293	30158		2406	14559	0047	00002	3865
0020	-0066	32016		2575	14424	0078	00006	2253
0030	-0025	32351		2600	14450	0100	00012	2011
0050	-0109	32683		2630	14418	0137	00027	1726
0075	-0133	32953		2653	14415	0178	00053	1510
0100	-0143	33171		2671	14417	0214	00085	1339
0125	-0150	3333 B		2684	14421	0246	00122	1214
0150	-0152	33456		2694	14425	0275	00163	1114
0175	-0150	33582		2704	14432	0302	00207	1016
0200	-0142	33699		2713	14442	0327	00254	0928
0225	-0116 B	33807		2721	14460	0349	00303	0853
0250	-0088 C	33906		2728	14478	0370	00354	0788
0300	-0024	34073		2739	14519	0407	00458	0690
0400	0048	34283		2752	14571	0471	00685	0572
0500	0076 B	3439 C		2759	14602	0526	00936	0510
0600	0080	34443		2763	14621	0575	01217	0476
0700	0094 C	3450 E		2767	14645	0622	01526	0442
0800	0071	34478		2767	14651	0667	01872	0445

C-REF-NO 340 YR 1960 DEPTH . 594 WAVES 1 35X1 AIR T 00.6 VIS 97  
 CONS. NO 077 MONTH 9 MXSAMPD 05 WAVES 2 3582 WET B ; STN 077  
 LAT 70-125N DAY 21 NO.DPTH 11 WND-DIR 350 WW-CODE 03  
 LON 65-550W HR 02.0 W-COLOR WND-SPD 03 CLD-TPE 6  
 MARSD SQ 259 W-TRNSP BARO 1012. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0330				
0010		0340	29421		2343	14570
0020		-0039	32149		2585	14439
0030		-0124	32354		2604	14403
0050		-0146	32596		2624	14400
0073		-0147	32734		2635	14405
0097		-0151	32966		2654	14410
0145		-0152	33359		2686	14423
0193		-0162	33624		2708	14430
0290		-0062	33936		2730	14498
0532		0063	34300		2753	14600

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0330	2617 I		2087	14520	0000	00000	6918
0010	0340	29421		2343	14570	0057	00002	4460
0020	-0039	32149		2585	14439	0090	00007.	2161
0030	-0124	32354		2604	14403	0111	00012	1976
0050	-0146	32596		2624	14400	0149	00027	1783
0075	-0147	32752		2637	14405	0192	00055	1661
0100	-0151	32994		2656	14411	0232	00090	1472
0125	-0152	33209		2674	14418	0267	00130	1306
0150	-0154	33391		2689	14424	0298	00174	1163
0175	-0160	33536		2701	14427	0326	00220	1049
0200	-0157	33653		2710	14434	0351	00269	0959
0225	-0136 C	3375 C		2717	14449	0374	00320	0891
*0250	-0111 C	3383 C		2723	14466	0396	00373	0836
0300	-0102 I	3402 I		2738	14482	0435	00481	0697
0400	-0044 I	3424 I		2753	14528	0498	00704	0551
*0500	0034 C	3431 D		2755	14582	0553	00959	0543

C-REF-NO 340 YR 1960 DEPTH 106 WAVES 1 27X3 AIR T 00.0 VIS 97  
 CONS. NO 078 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 078  
 LAT 70-050N DAY 21 NO.DPTH 7 WND-DIR 040 WW-CODE 02  
 LON 66-420W HR 04.3 W-COLOR WND-SPD 02 CLD-TPE 5  
 MARSD SQ 259 W-TRNSP BARO 1013. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0160				
0010		0165	29328	2348	14491	
0020		0025	30611	2458	14447	
0030		-0101	31993	2574	14409	
0050		-0155	32466	2614	14394	
0075		-0154	32651	2629	14401	
0100		-0150	32801	2641	14409	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0160	2744 I		2198	14462	0000	00000	5849
0010	0165	29328		2348	14491	0051	00002	4412
0020	0025	30611		2458	14447	0091	00008	3363
0030	-0101	31993		2574	14409	0119	00015	2259
0050	-0155	32466		2614	14394	0160	00032	1880
0075	-0154	32651		2629	14401	0206	00061	1737
0100	-0150	32801		2641	14409	0248	00098.	1621

C-REF-NO 340 YR 1960 DEPTH WAVES 1 36X1 AIR T 01.1 VIS 97  
 CONS. NO 079 MONTH 9 MXSAMPO 08 WAVES 2 3626 WET B, STN 079  
 LAT 69-32N DAY 21 NU.DPTH 13 WND-DIR 360 WW-CODE 02  
 LON 64-43W HR 09.8 W-COLOR WND-SPD 02 CLD-TPE 6  
 MARSD SQ 223 W-TRNSP BARO 1014. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0340					
0010	0348	30095		2396	14582	
0020	0030	31897		2561	14467	
0030	-0121	32393		2607	14405	
0050	-0159	32498		2616	14392	
0075	-0154	32730		2635	14402	
0100	-0151	33029		2659	14412	
0150	-0152	33373		2687	14424	
0200	-0162	33617		2707	14431	
0300	-0080	33904		2728	14490	
0400	0029	34228		2749	14562	
0600	0071	34414		2761	14616	
0800	0045	34448		2766	14638	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-U	POT. EN	SVA
0000	0340	2781 I	2215	14546	0000	00000.	5683	
0010	0348	30095	2396	14582	0048	00002	3956	
0020	0030	31897	2561	14467	0080	00007	2382	
0030	-0121	32393	2607	14405	0102	00012	1947	
0050	-0159	32498	2616	14392	0140	00028	1855	
0075	-0154	32730	2635	14402	0185	00056	1676	
0100	-0151	33029	2659	14412	0224	00091	1445	
0125	-0150	3323 C	2675	14419	0259	00130	1291	
0150	-0152	33373	2687	14424	0290	00174	1178	
0175	-0159	33505	2698	14427	0318	00221	1073	
0200	-0162	33617	2707	14431	0344	00271	0985	
0225	-0149	3370 C	2714	14443	0368	00323	0924	
0250	-0131 B	3378 D	2719	14456	0391	00378	0871	
0300	-0080	33904	2728	14490	0433	00496	0791	
0400	0029	34228	2749	14562	0503	00744	0602	
0500	0069 B	3437 G	2758	14598	0560	01005	0522	
0600	0071	34414	2761	14616	0611	01294	0491	
0700	0087 D	3451 I	2768	14642	0658	01605	0434	
0800	0045	34448	2766	14638	0702	01949	0447	

C-REF-NO 340 YR 1960 DEPTH 82 WAVES 1 11X3 AIR T 01.7 VIS 98  
 CONS. NO 080 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 080  
 LAT 68-030N DAY 21 NO.DPTH 6 WND-DIR 110 WW-CODE 02  
 LON 64-300W HR 18.3 W-COLOR WND-SPD 07 CLD-TPE 6  
 MARSD SQ 223 W-TRNSP BARO 1014. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0160				
0010		0085	31492		2526	14485
0020		0064	31593		2535	14478
0030		-0067	32248		2594	14429
0050		-0146	32593		2624	14400
0075		-0152	32803		2641	14404

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0160	3123 I		2501	14513	0000	00000	2958
0010	0085	31492		2526	14485	0029	00001	2718
0020	0064	31593		2535	14478	0055	00006	2630
0030	-0067	32248		2594	14429	0079	00011	2074
0050	-0146	32593		2624	14400	0118	00027	1785
0075	-0152	32803		2641	14404	0161	00054	1620

C-REF-NO 340 YR 1960 DEPTH 1280 WAVES 1 14X2 AIR T 01.1 VIS 97  
 CONS. NO 081 MONTH 9 MXSAMPD 12 WAVES 2 1446 WET B STN 081  
 LAT 68-095N DAY 21 NO.DPTH 15 WND-DIR 140 Ww-CODE 03  
 LON 63-250W HR 22.0 W-COLOR WND-SPD 08 CLD-TPE 6  
 MARSD SQ 223 W-TRNSP BARO 1014. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000	0280					
0010	0289	30894		2465	14567	
0020	0223	32408		2590	14561	
0030	-0040	32408		2606	14443	
0050	-0127	32847		2644	14412	
0075	-0147	33036		2660	14410	
0100	-0147	33212		2674	14416	
0150	-0140	33560		2702	14433	
0200	-0100	33769		2718	14463	
0300	0004	34122		2742	14532	
0400	0053	34296		2753	14573	
0600	0065	34415		2762	14614	
0800	0053	34452		2766	14642	
1000	0037	34452		2766	14668	
1200	0013	34468		2769	14691	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0280	2922 I		2332	14539	0000	00000	4571
0010	0289	30894		2465	14567	0040	00002	3304
0020	0223	32408		2590	14561	0067	00006	2108
0030	-0040	32408		2606	14443	0087	00011	1961
0050	-0127	32847		2644	14412	0123	00025	1595
0075	-0147	33036		2660	14410	0161	00049	1443
0100	-0147	33212		2674	14416	0196	00080	1306
0125	-0146	3340 B		2689	14423	0227	00116	1164
0150	-0140	33560		2702	14433	0255	00155	1038
0175	-0123	3368 B		2711	14447	0280	00197	0955
0200	-0100	33769		2718	14463	0303	00241	0890
0225	-0073	33870		2725	14481	0325	00288	0823
0250	-0047 B	3396 B		2731	14498	0345	00337	0764
0300	0004	34122		2742	14532	0381	00439	0668
0400	0053	34296		2753	14573	0443	00660	0566
0500	0068 B	3438 C		2759	14598	0498	00911	0513
0600	0065	34415		2762	14614	0548	01196	0486
0700	0061	34441		2764	14629	0596	01516	0464
0800	0053	34452		2766	14642	0642	01873	0450
1000	0037	34452		2766	14668	0732	02705	0438
1200	0013	34468		2769	14691	0818	03672	0407

C-REF-NO 340 YR 1960 DEPTH WAVES 1 14X2 AIR T 00.0 VIS 97  
 CONS. NO 082 MONTH 9 MXSAMPD 14 WAVES 2 1446 WET B STN 082  
 LAT 68-200N DAY 22 NO.DPTH 18 WND-DIR 140 WW-CODE 03  
 LON 62-050W HR 02.6 W-COLOR WND-SPD 08 CLD-TPE 6  
 MARSD SQ 223 W-TRNSP BARO 1014. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

0000	0240					
0010	0259	30986		2474	14555	
0020	0196	31374		2510	14535	
0030	-0146	32697		2632	14398	
0045	-0149	32907		2649	14402	
0068	-0153	33148		2669	14407	
0091	-0153	33369		2687	14414	
0136	-0163	33634		2709	14420	
0183	-0133	33762		2718	14444	
0279	-0007	34031		2735	14522	
0376	0074	34269		2750	14579	
0571	0085	34412		2760	14618	
0765	0101	34484		2765	14658	
0959	0064	34488		2768	14674	
1153	0025	34468		2768	14689	
1440	-0022	34471		2771	14716	
1445	-0019	34476		2771	14718	
1450	-0018	34475		2771	14719	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0240	3012 I		2407	14534	0000	00000	3855
0010	0259	30986		2474	14555	0036	00002	3212
0020	0196	31374		2510	14535	0066	00006	2874
0030	-0146	32697		2632	14398	0089	00012	1707
0050	-0150	32964		2654	14403	0121	00025	1499
0075	-0153	33219		2675	14409	0157	00047	1301
0100	-0156	33436		2692	14415	0187	00074	1132
0125	-0162	33586		2705	14419	0214	00105	1014
0150	-0157	3368 B		2712	14426	0239	00140	0941
0175	-0140	33745		2717	14439	0262	00179	0895
0200	-0112	33810		2721	14457	0284	00221	0854
0225	-0080 B	33881		2726	14477	0305	00267	0811
*0250	-0047 B	33951		2730	14498	0325	00315	0772
0300	0015	34089		2738	14537	0362	00420	0699
0400	0081 B	3430 B		2752	14586	0427	00649	0581
0500	0092 C	3439 E		2758	14609	0483	00906	0523
0600	0089	34427		2761	14625	0534	01196	0494
0700	0098	34468		2764	14646	0583	01523	0473

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0096	34488		2766	14662	0630	01885	0458
1000	0056	34484		2768	14677	0720	02715	0430
1200	0000 G	3447 H		2770	14685	0804	03662	0398

C-REF-NO 340 YR 1960 DEPTH WAVES 1 16X1 AIR T 00.6 VIS 98  
 CONS. NO 083 MONTH 9 MXSAMPD 14 WAVES 2 1626 WET B STN 083  
 LAT 68-380N DAY 22 NO.DPTH 15 WND-DIR 160 WW-CODE 02  
 LON 60-050W HR 08.2 W-COLOR WND-SPD 05 CLD-TPE 5  
 MARSD SQ 223 W-TRNSP BARO 1014. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
-----	-------	------	-----	--------	------	-------

	0000	0360				
	0010	0352	32766		2608	14620
	0020	0373	33046		2628	14634
	0030	0159	33387		2673	14547
	0050	-0084	33602		2704	14443
	0075	-0146	33692		2713	14419
	0100	-0113	33784		2719	14440
	0150	-0029	33930		2728	14490
	0200	0009	34039		2735	14517
	0300	0222	34419		2751	14634
	0400	0291	34597		2759	14683
	0600	0202	34586		2766	14677
	0800	0070	34484		2767	14650
	1000	0039	34478		2768	14670
	1400	-0012	34481		2771	14714

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0360	3237 I		2576	14616	0000	00000	2245
0010	0352	32766		2608	14620	0021	00001	1940
0020	0373	33046		2628	14634	0040	00004	1749
0030	0159	33387		2673	14547	0055	00008	1321
0050	-0084	33602		2704	14443	0079	00017	1030
0075	-0146	33692		2713	14419	0104	00033	0940
0100	-0113	33784		2719	14440	0127	00053	0879
0125	-0070	33862		2724	14466	0148	00078	0834
0150	-0029	33930		2728	14490	0169	00107	0800
0175	-0010	33983		2731	14503	0188	00140	0768
0200	0009	34039		2735	14517	0207	00177	0735
0225	0060 D	3413 D		2740	14546	0225	00216	0693
0250	0113 E	3423 F		2744	14575	0242	00257	0656
0300	0222	34419		2751	14634	0274	00346	0598
0400	0291	34597		2759	14683	0331	00550	0532
0500	0268 D	3463 F		2764	14690	0383	00788	0493
0600	0202	34586		2766	14677	0431	01063	0469
0700	0132 B	3454 C		2767	14662	0478	01373	0450
0800	0070	34484		2767	14650	0523	01721	0440
1000	0039	34478		2768	14670	0610	02526	0421
1200	-0019 D	3445 D		2769	14677	0693	03461	0396

C-REF-NO 340 YR 1960 DEPTH 307 WAVES 1 09X1 AIR T 05.6 VIS 97  
 CONS. NO 084 MONTH 9 MXSAMPD 02 WAVES 2 XX WET B STN 084  
 LAT 69-010N DAY 22 NO.DPTH 9 WND-DIR 090 WW-CODE 02  
 LON 58-050W HR 12.7 W-COLOR WND-SPD 01 CLD-TPE 5  
 MARSD SQ 222 W-TRNSP BARO 1012. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0550					
0010	0563	33595		2651	14719	
0020	0557	33586		2651	14718	
0030	0557	33619		2654	14720	
0050	0196	33811		2705	14573	
0075	0074	33908		2721	14524	
0100	0086	33984		2726	14534	
0150	0157	34117		2732	14576	
0200	0110	34152		2738	14564	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0550	3365 B		2657	14713	0000	00000	1478
0010	0563	33595		2651	14719	0015	00001	1532
0020	0557	33586		2651	14718	0031	00003	1533
0030	0557	33619		2654	14720	0046	00007	1509
0050	0196	33811		2705	14573	0071	00017.	1026
0075	0074	33908		2721	14524	0095	00032	0872
0100	0086	33984		2726	14534	0117	00051	0821
0125	0125 C	34058		2729	14557	0137	00075	0790
0150	0157	34117		2732	14576	0157	00102	0769
0175	0126 D	3414 B		2736	14567	0176	00134	0732
0200	0110	34152		2738	14564	0194	00169	0711

C-REF-NO 340 YR 1960 DEPTH 132 WAVLS 1 16X6 AIR T 01.1 VIS 97  
 CONS. NO 085 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 085  
 LAT 66-150N DAY 23 NO.DPTH 7 WND-DIR 160 WW-CODE 70  
 LON 54-480W HR 05.8 W-COLOR WND-SPD 15 CLD-TPE 7  
 MARSD SQ 222 W-TRNSP BARO 1003. CLD-AMT 7 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0330	32106		2558	14600
	0009	0331	31935		2544	14599
	0017	0327	31948		2545	14599
	0026	0333	32348		2577	14609
	0043	0296	33259		2652	14608
	0065	0283	33609		2681	14611
	0087	0265	33753		2694	14608

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0330	32106		2558	14600	0000	00000	2419
0010	0330	31924		2543	14599	0025	00001	2558
0020	0329	3206 D		2554	14602	0050	00005	2458
0030	0326	3258 H		2595	14609	0073	00011	2060
0050	0290	3343 I		2667	14609	0108	00024	1386
0075	0269	3381 I		2698	14609	0139	00044	1088

C-REF-NO 340 YR 1960 DEPTH 146 WAVES 1 16X6 AIR T VIS 97  
 CONS. NO 086 MONTH 9 MXSAMPD 01 WAVES 2 1686 WET B STN 086  
 LAT 66-150N DAY 23 NO.DPTH 8 WND-DIR 170 WW-CODE 02  
 LON 56-120W HR 09.9 W-COLOR WND-SPD 17 CLD-TPE 6  
 MARSD SQ 222 W-TRNSP BARO 1001. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0250	31856		2544	14562
0010		0249	31832		2542	14563
0020		0245	31829		2543	14562
0030		0132	32347		2592	14521
0049		-0152	33028		2659	14403
0074		-0144	33282		2680	14414
0098		-0109	33596		2704	14439
0128		0068	33907		2721	14530

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0250	31856		2544	14562	0000	00000	2545
0010	0249	31832		2542	14563	0026	00001	2563
0020	0245	31829		2543	14562	0051	00005	2563
0030	0132	32347		2592	14521	0075	00011	2093
0050	-0156	3304 B		2661	14401	0110	00025	1436
0075	-0144	33295		2681	14415	0144	00046	1245
0100	-0088 C	3359 E		2703	14449	0173	00072	1033
0125	0047	33873		2719	14519	0197	00099	0883

C-REF-NO 340 YR 1960 DEPTH 631 WAVES 1 20X9 AIR T 03.9 VIS 97  
 CONS. NO 087 MONTH 9 MXSAMPD 05 WAVES 2 XX WET B STN 087  
 LAT 66-150N DAY 23 NO.DPTH 13 WND-DIR 220 WW-CODE 02  
 LON 58-030W HR 15.7 W-COLOR WND-SPD 13 CLD-TPE 6  
 MARSD SQ 222 W-TRNSP BARO 1001. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0320	32130		2560	14596	
0010	0320	32080		2556	14597	
0020	0316	32076		2556	14597	
0030	0319	32043		2554	14599	
0050	0328	32450		2585	14612	
0075	0366	33655		2677	14648	
0100	0176	33811		2706	14572	
0134	0105	33976		2724	14548	
0178	0199	34216		2737	14601	
0223	0266	34354		2742	14639	
0266	0375	34585		2750	14696	
0356	0243	34513		2757	14653	
0535	0143	34523		2765	14639	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0320	32130		2560	14596	0000	00000.	2393
0010	0320	32080		2556	14597	0024	00001	2431
0020	0316	32076		2556	14597	0049	00005	2431
0030	0319	32043		2554	14599	0073	00011	2459
0050	0328	32450		2585	14612	0120	00030	2160
0075	0366	33655		2677	14648	0163	00057	1287
0100	0176	33811		2706	14572	0192	00082	1013
0125	0107	33934		2721	14547	0216	00109	0873
0150	0129 C	3407 B		2730	14563	0237	00139	0786
0175	0190	34201		2736	14596	0256	00171	0731
0200	0231	3428 C		2740	14619	0274	00205	0702
0225	0272	34366		2743	14642	0291	00243	0677
0250	0338 B	3450 D		2747	14677	0308	00284	0636
0300	0351 G	3460 I		2754	14692	0339	00370	0581
0400	0341 I	3471 I		2764	14706	0393	00564	0498
0500	0216 I	3461 I		2767	14667	0442	00786	0459

C-REF-NO 340 YR 1960 DEPTH 521 WAVES 1 16X3 AIR T 01.1 VIS 97  
 CONS. NO 088 MONTH 9 MXSAMPD 05 WAVES 2 1686 WET B STN 088  
 LAT 66-22N DAY 23 NO.DPTH 12 WND-DIR 160 WW-CUDE 02  
 LON 60-060W HR 20.8 W-COLOR WND-SPD 12 CLD-TPE 6  
 MARSD SQ 223 W-TRNSP BARO 1000. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000	0190	31255		2501	14527	
0010	0172	31227		2500	14520	
0020	0170	31224		2500	14521	
0030	0172	31228		2500	14524	
0050	-0003	32212		2588	14461	
0075	-0141	33406		2690	14418	
0100	-0144	33576		2703	14423	
0148	-0138	33727		2715	14436	
0197	-0082	33842		2723	14472	
0295	0045	34101		2738	14550	
0394	0119	34346		2753	14603	
0492	0104	34403		2758	14613	

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0190	31255	2501	14527	0000	00000	2960	
0010	0172	31227	2500	14520	0030	00002.	2970	
0020	0170	31224	2500	14521	0060	00006	2971	
0030	0172	31228	2500	14524	0090	00014	2969	
0050	-0003	32212	2588	14461	0141	00034	2125	
0075	-0141	33406	2690	14418	0182	00059	1161	
0100	-0144	33576	2703	14423	0210	00083	1028	
0125	-0145	3367 C	2711	14428	0235	00112	0953	
0150	-0136	33732	2716	14437	0258	00145	0908	
0175	-0111	33792	2720	14454	0281	00182	0869	
0200	-0078	33850	2723	14474	0302	00224	0837	
0225	-0044	33915	2727	14495	0323	00269	0802	
*0250	-0011	33981	2731	14515	0343	00317	0768	
0300	0050	34116	2739	14553	0380	00421	0700	
0400	0115	3433 F	2752	14602	0445	00652	0586	
0500	0100	34406	2759	14613	0500	00908	0517	

C-REF-NO 340 YR 1960 DEPTH WAVES 1 16X3 AIR T 01.1 VIS 90  
 CONS. NO 089 MONTH 9 MXSAMPD 01 WAVES 2 1686 WET B STN 089  
 LAT 66-153N DAY 24 NO.DPTH 8 WND-DIR 150 WW-CODE 02  
 LON 61-310W HR 00.2 W-COLOR WND-SPD 15 CLD-TPE  
 MARSD SQ 223 W-TRNSP BARO 998. CLD-AMT 9 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
	0000	0150	31336		2510	14510
	0010	0139	31298		2507	14506
	0020	0138	31297		2507	14508
	0030	0129	31347		2512	14506
	0050	-0014	31757		2552	14450
	0075	-0043	32269		2594	14447
	0100	-0142	32953		2653	14415
	0150	-0142	33411		2690	14430

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0150	31336		2510	14510	0000	00000	2874
0010	0139	31298		2507	14506	0029	00001	2896
0020	0138	31297		2507	14508	0058	00006	2896
0030	0129	31347		2512	14506	0087	00013	2853
0050	-0014	31757		2552	14450	0141	00035	2469
0075	-0043	32269		2594	14447	0198	00071	2064
0100	-0142	32953		2653	14415	0243	00110	1506
0125	-0133 F	3319 I		2671	14427	0278	00151	1329
0150	-0142	33411		2690	14430	0310	00195	1152

C-REF-NO 340 YR 1960 DEPTH WAVES 1 04X3 AIR T 06.7 VIS 98  
 CONS. NO 090 MONTH 9 MXSAMPD 01 WAVES 2 XX WET B STN 090  
 LAT 65-000N DAY 25 NO.DPTH 8 WND-DIR 360 WW-CODE 03  
 LON 61-160W HR 18.6 W-COLOR WND-SPD 03 CLD-TPE 5  
 MARSID SQ 223 W-TRNSP BARO 1018. CLD-AMT 6 HW

## O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
0000		0185	31485		2519	14528
0010		0152	31496		2522	14515
0020		0153	31710		2539	14520
0030		0128	32343		2592	14519
0050		-0089	32774		2637	14429
0075		-0149	33022		2659	14408
0100		-0148	33241		2676	14416
0150		-0125	33622		2707	14441

## I N T E R P O L A T E D

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0185	31485		2519	14528	0000	00000	2782
0010	0152	31496		2522	14515	0028	00001	2753
0020	0153	31710		2539	14520	0055	00006	2591
0030	0128	32343		2592	14519	0078	00011	2094
0050	-0089	32774		2637	14429	0116	00026	1663
0075	-0149	33022		2659	14408	0155	00051	1453
0100	-0148	33241		2676	14416	0190	00082	1284
0125	-0157 B	33444		2693	14419	0220	00117	1124
0150	-0125	33622		2707	14441	0247	00154	0996

## SECTION IV

Bathythermograms



M.V. "THETA"

Bathythermograms

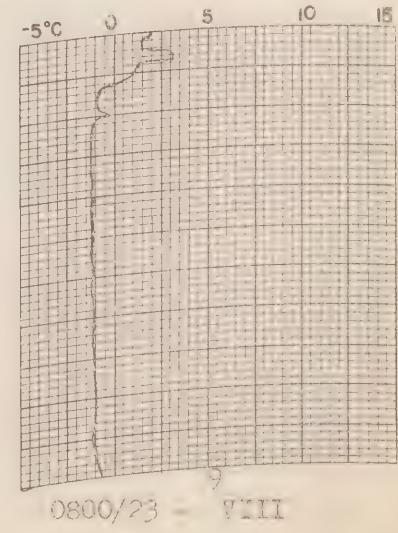
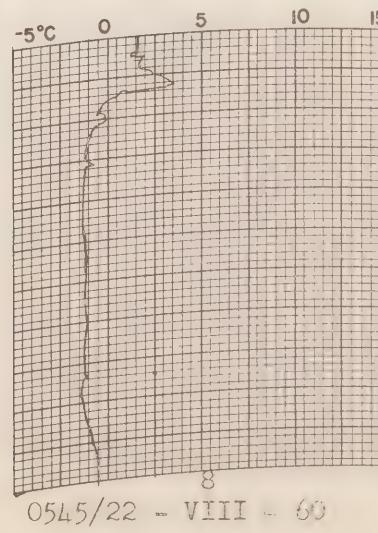
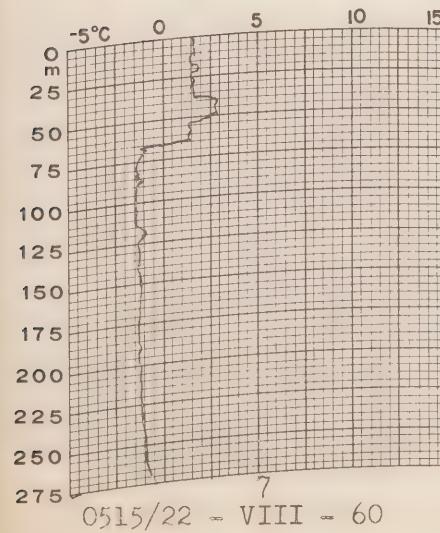
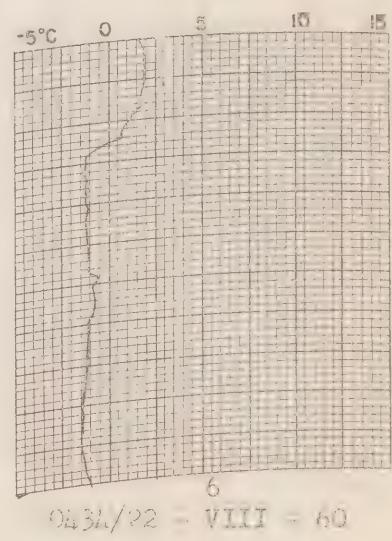
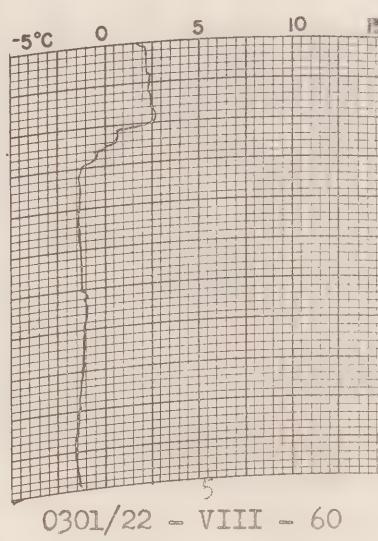
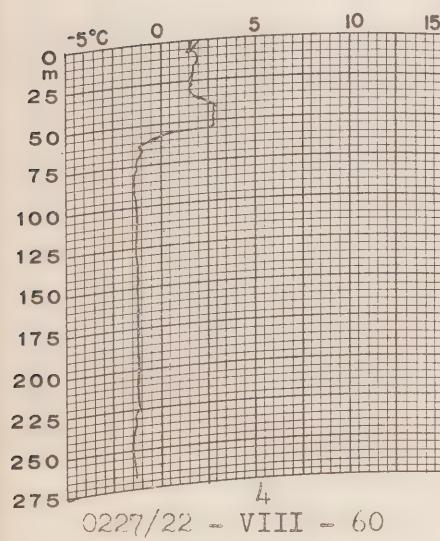
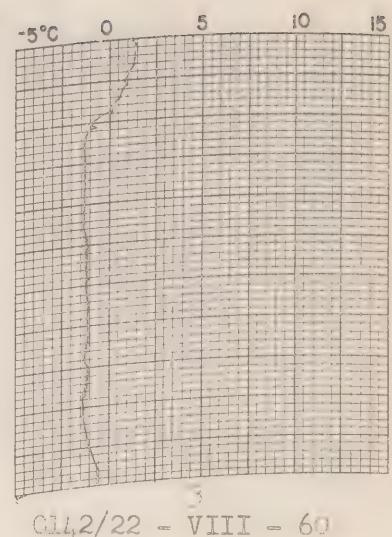
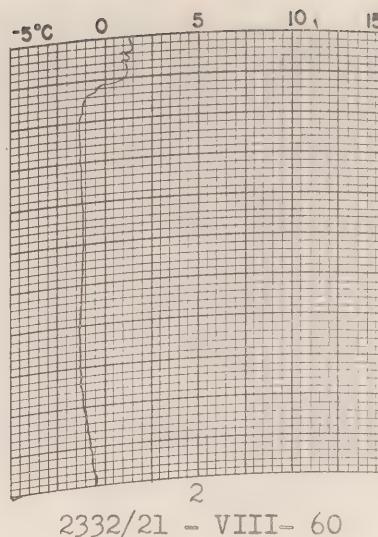
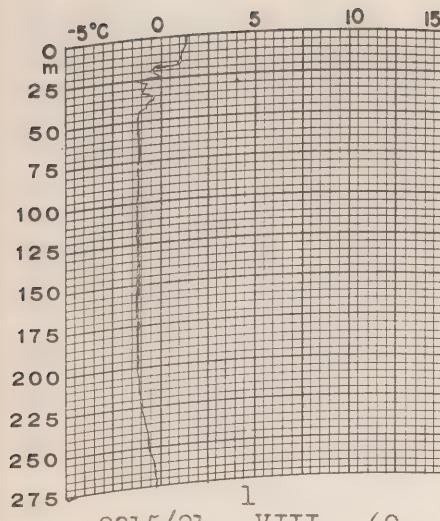


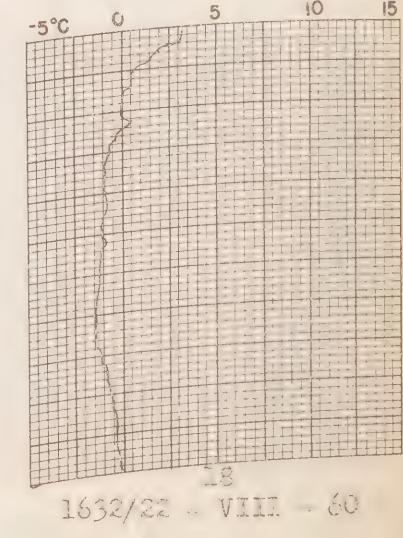
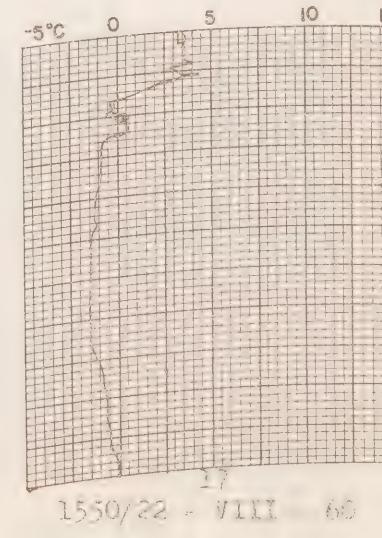
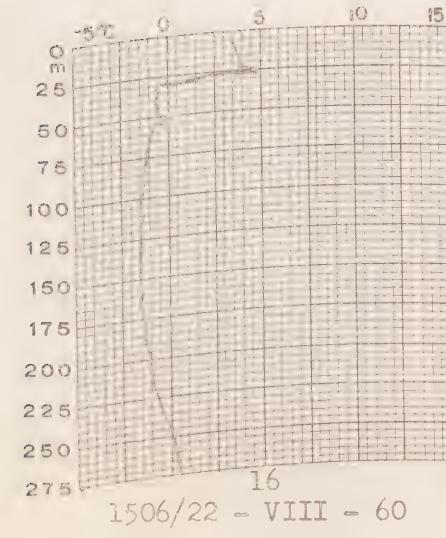
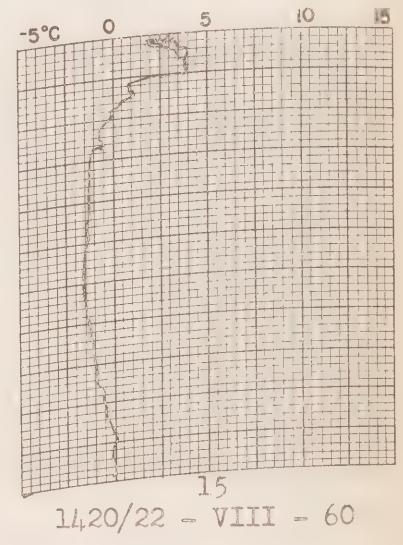
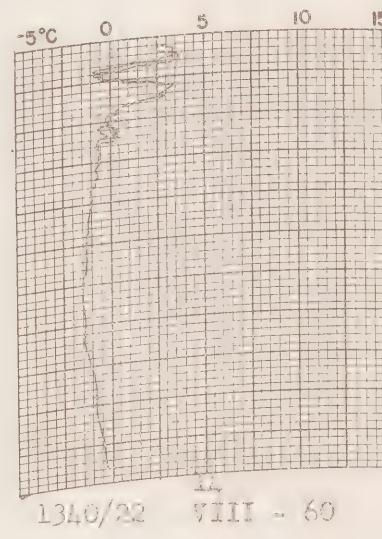
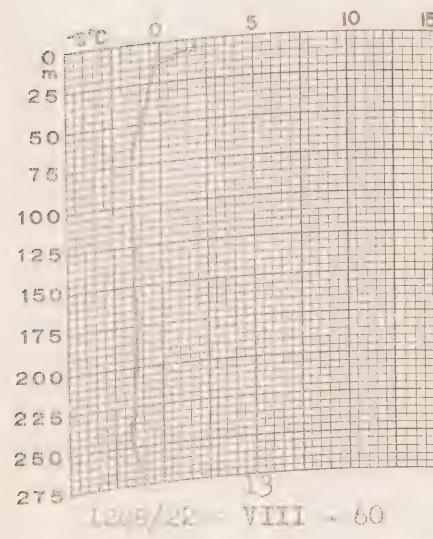
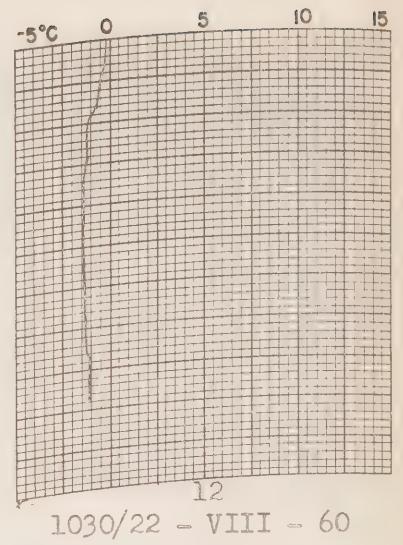
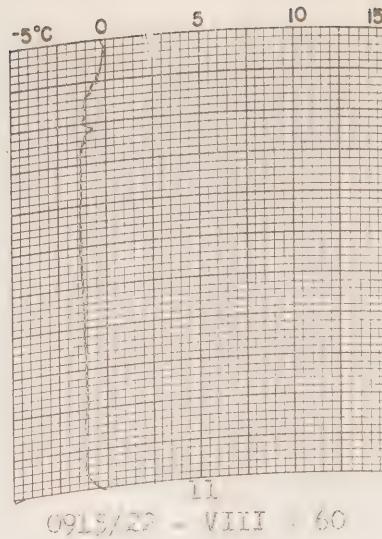
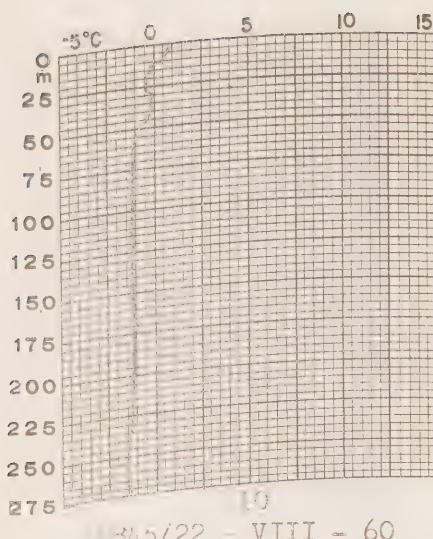
TABLE 1

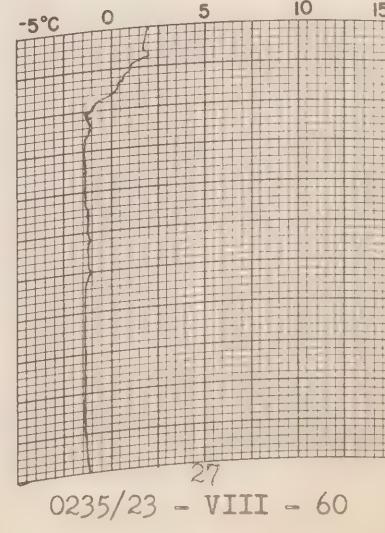
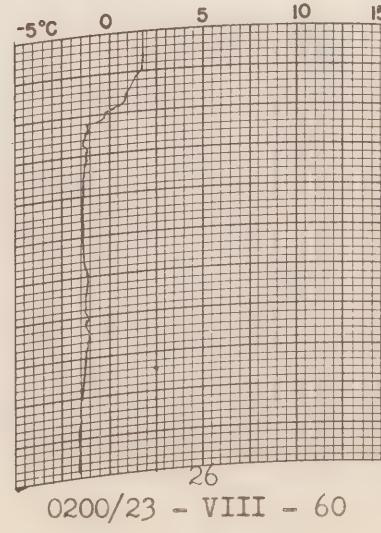
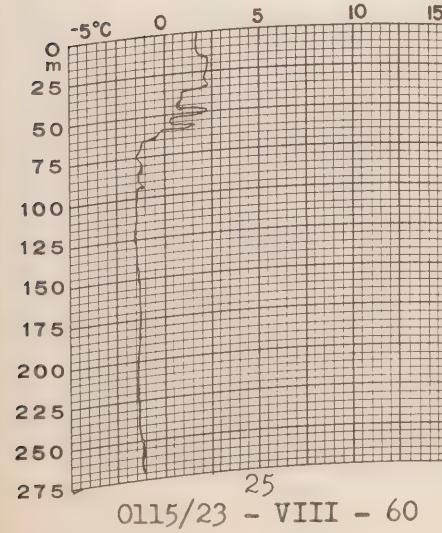
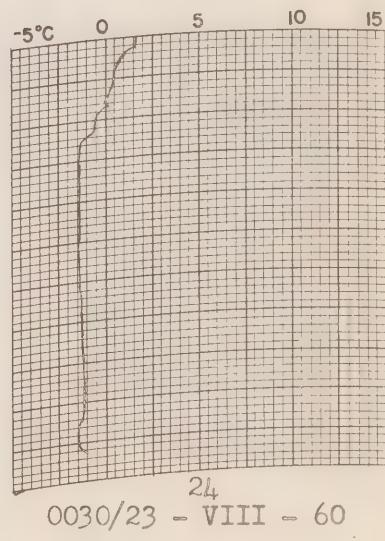
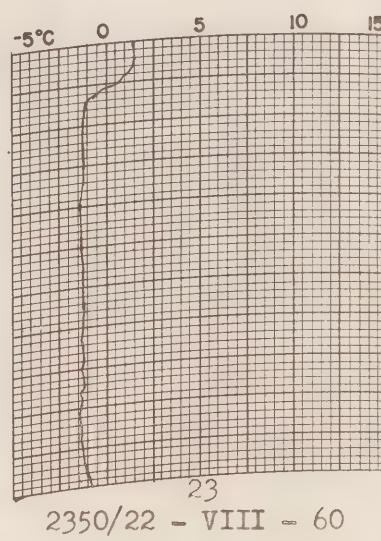
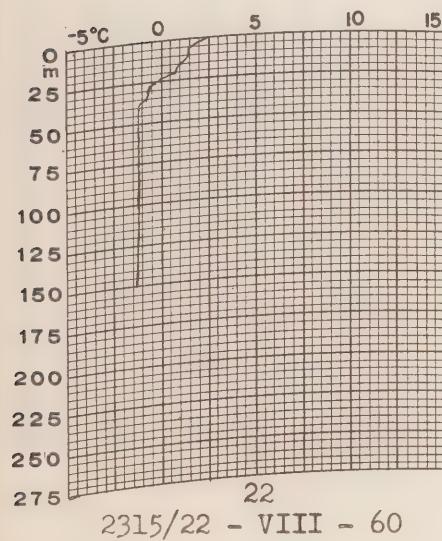
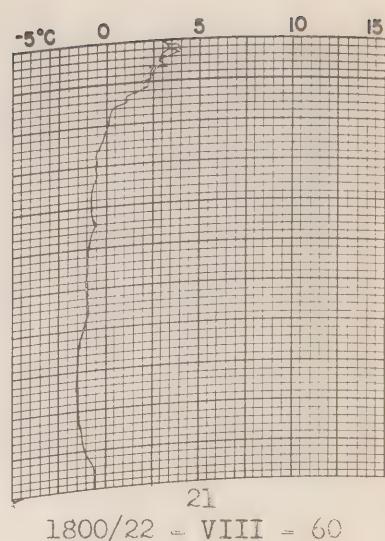
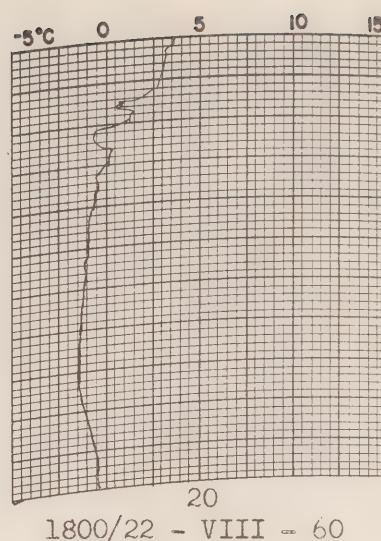
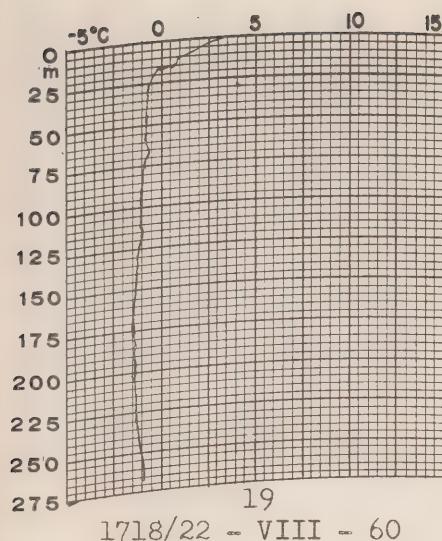
"Theta" station numbers and slide numbers. The approximate position of the station and BT lowerings is shown in Figures 2 and 3.

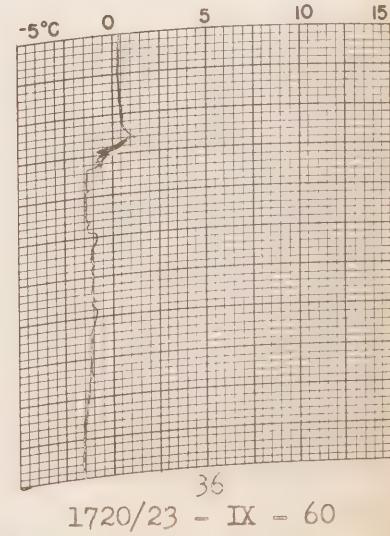
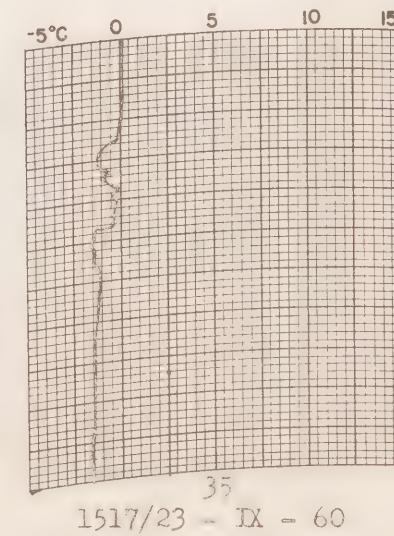
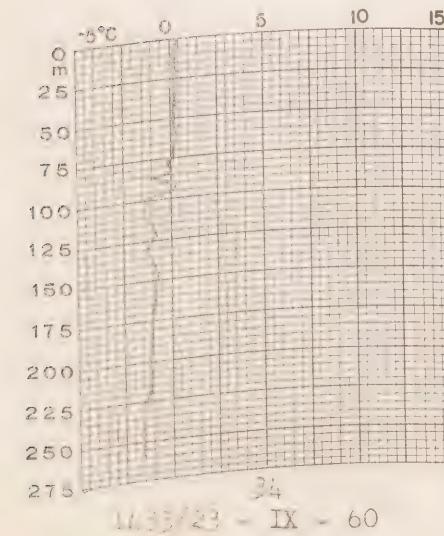
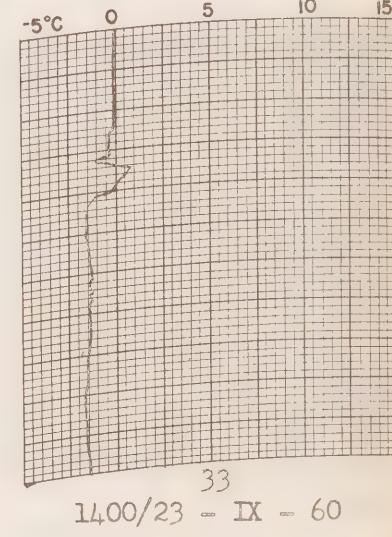
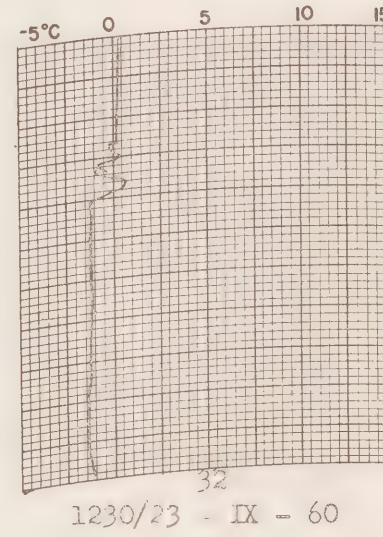
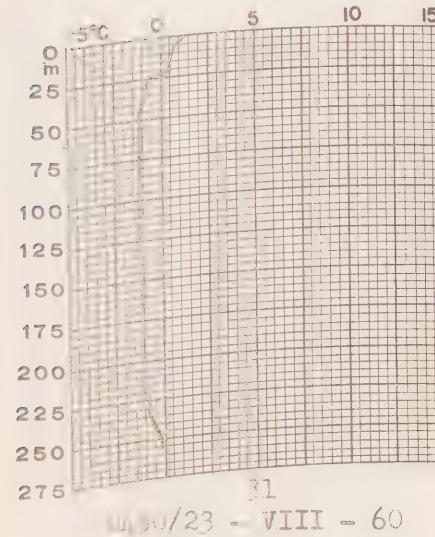
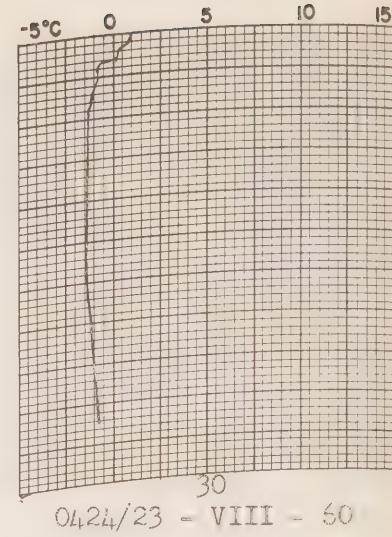
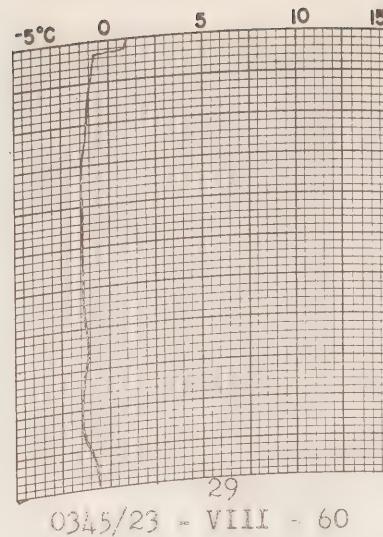
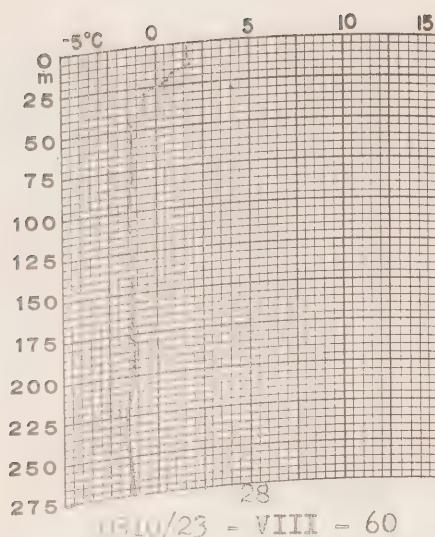
<u>Stn. No.</u>	<u>Slide No.</u>	<u>Stn. No.</u>	<u>Slide No.</u>
	1	35	35
2	2		36
	3		37
	4	38	38
5	5		39
	6		40
	7	41	41
8	8		42
	9		43
	10	44	44
11	11		45
	12		46
	13	47	47
	14		48
	15		49
	16	50	50
	17		51
	18		52
	19		53
	20		54
	21	55	55
	22		56
	23		57
	24	58	58
	25		59
	26		60
	27	61	61
	28		62
	29		63
	30	64	64
	31		65
32	32		66
	33		67
	34		68

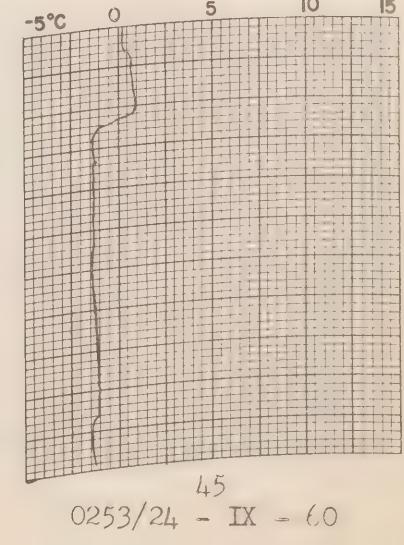
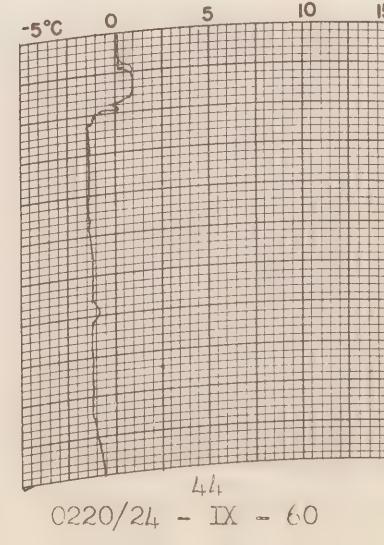
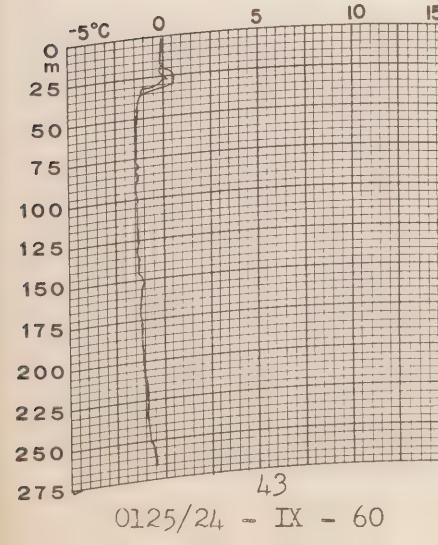
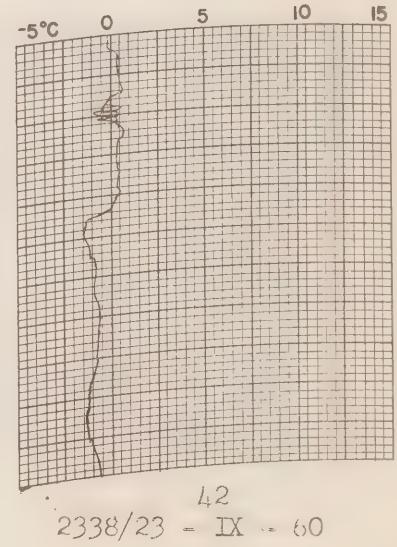
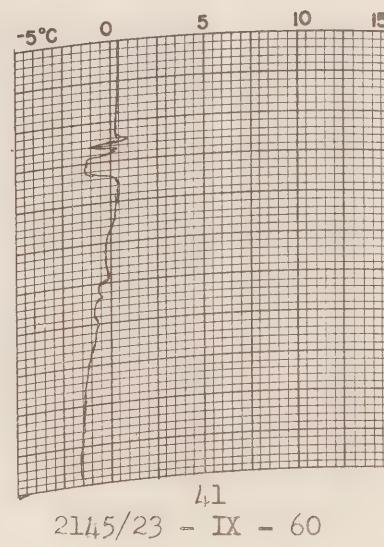
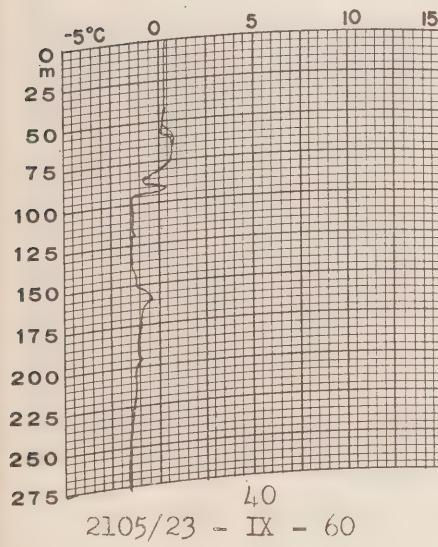
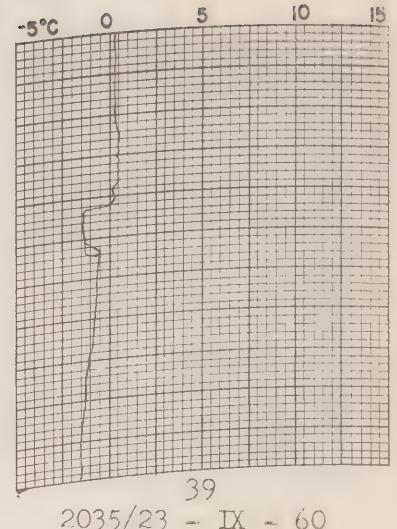
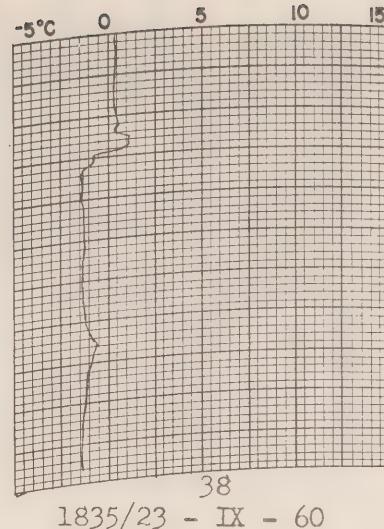
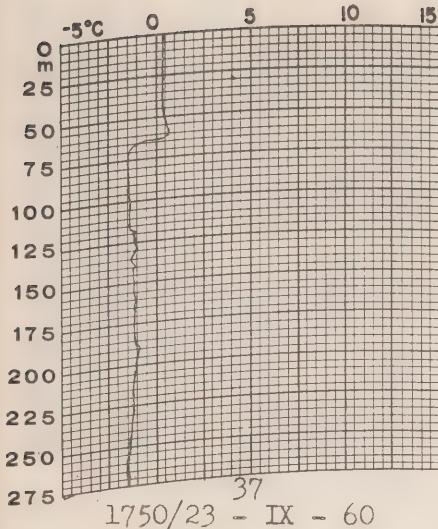


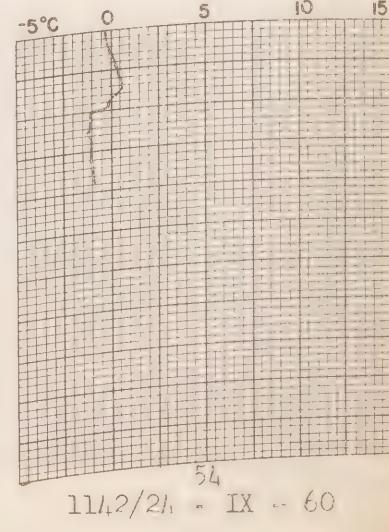
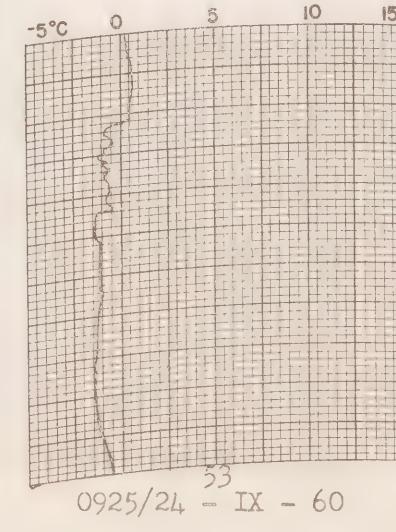
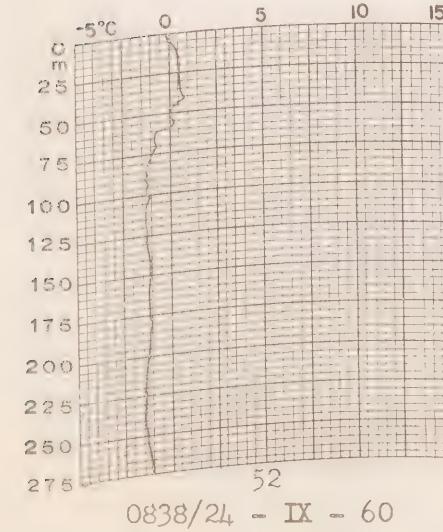
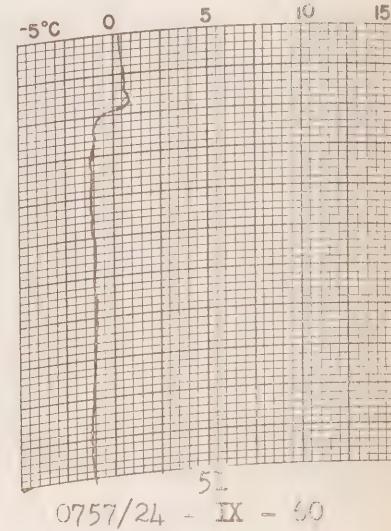
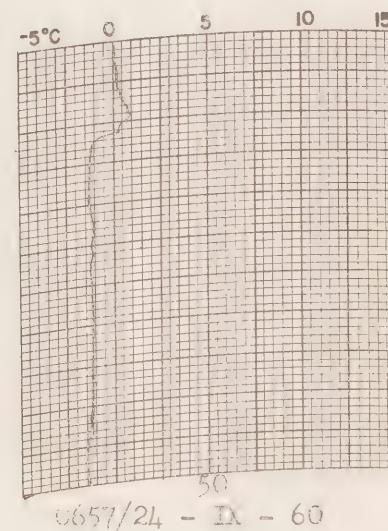
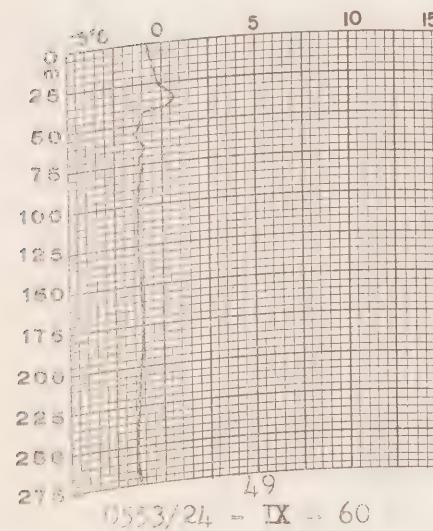
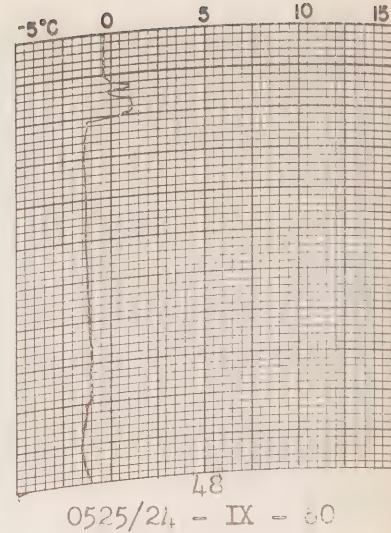
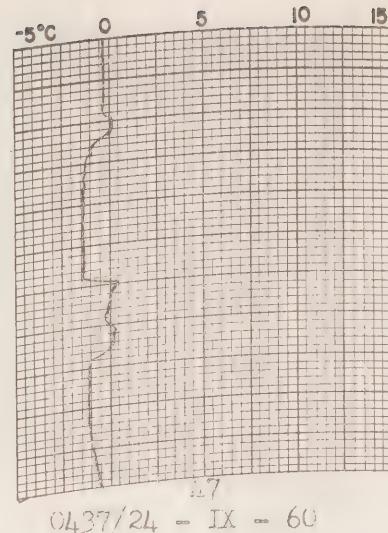
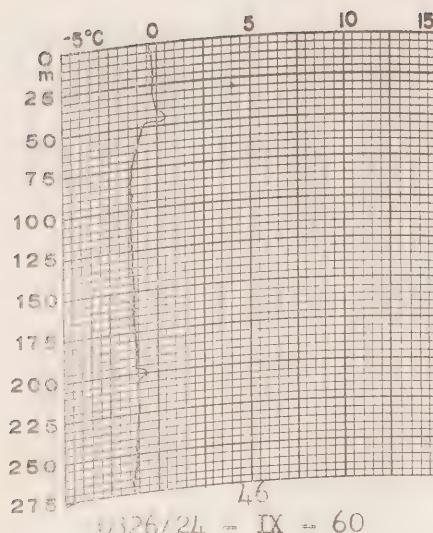


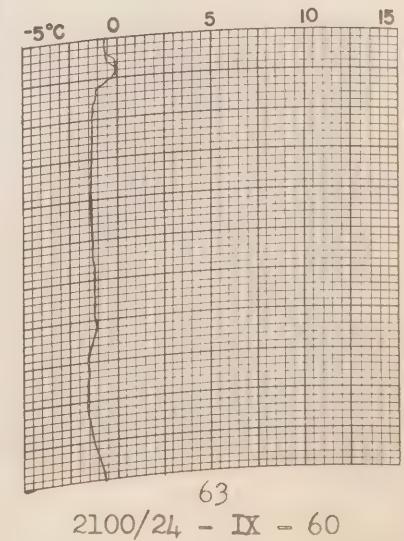
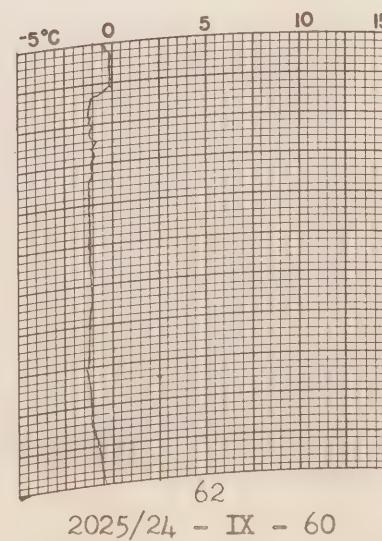
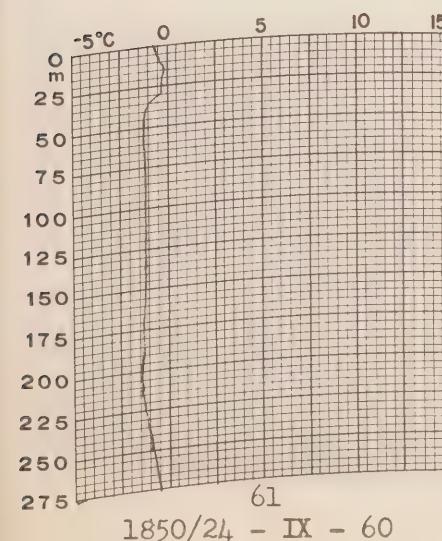
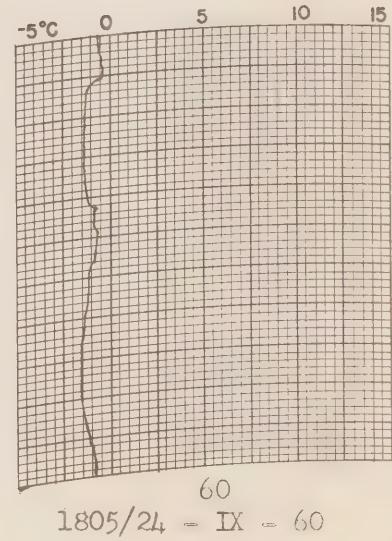
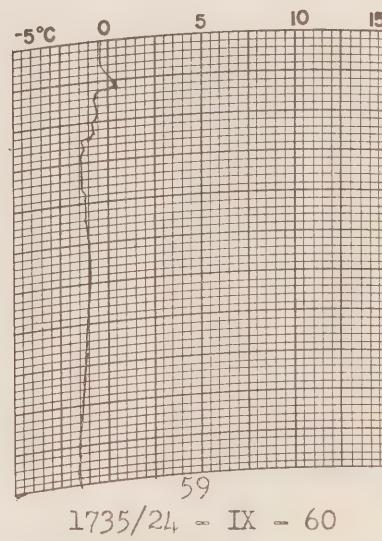
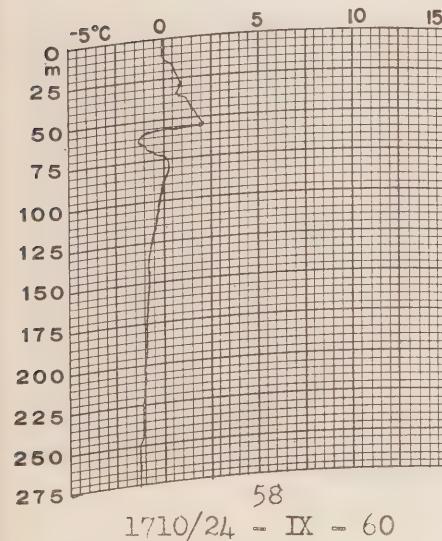
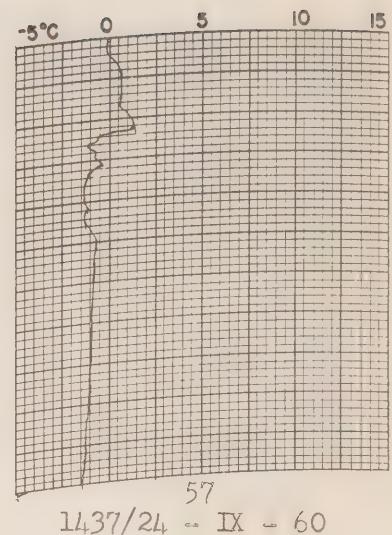
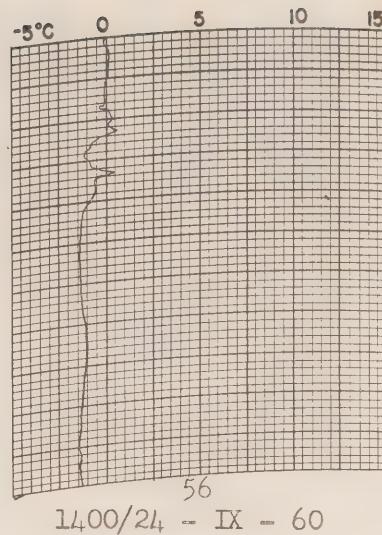
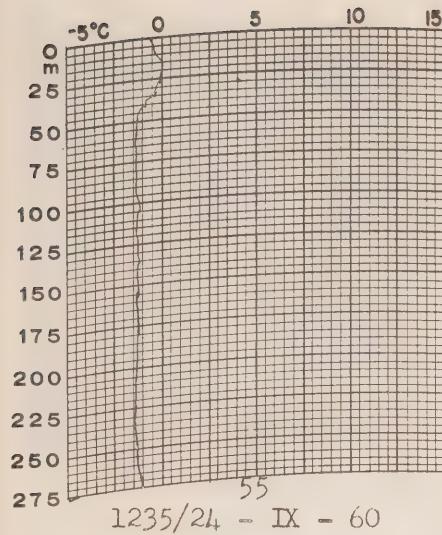


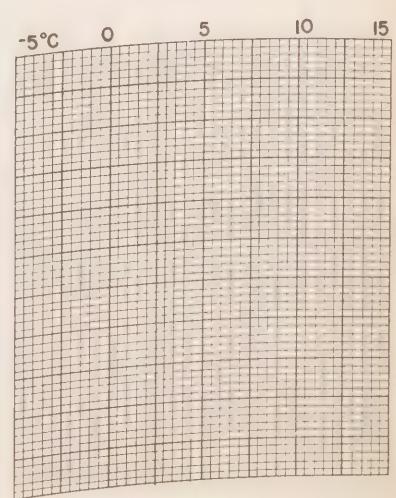
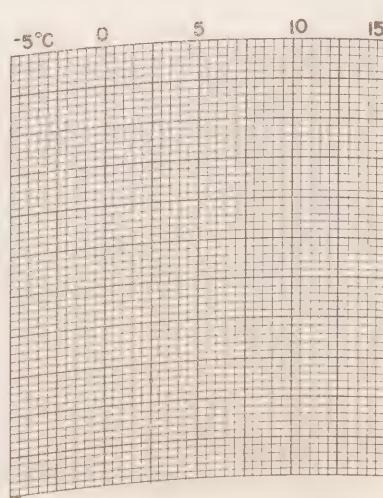
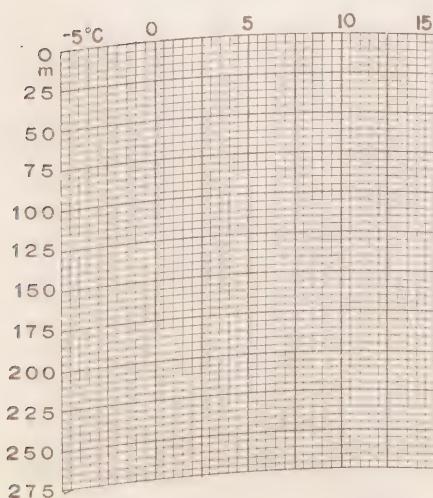
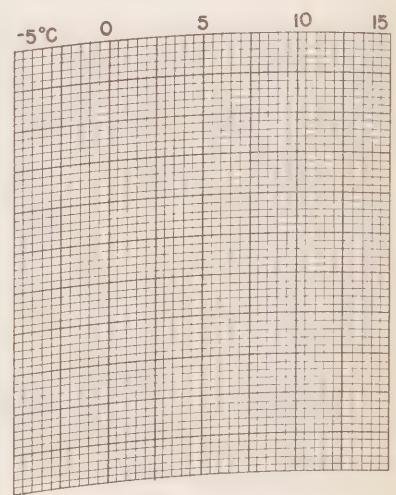
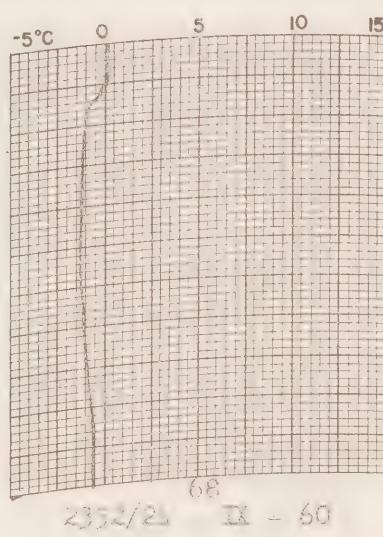
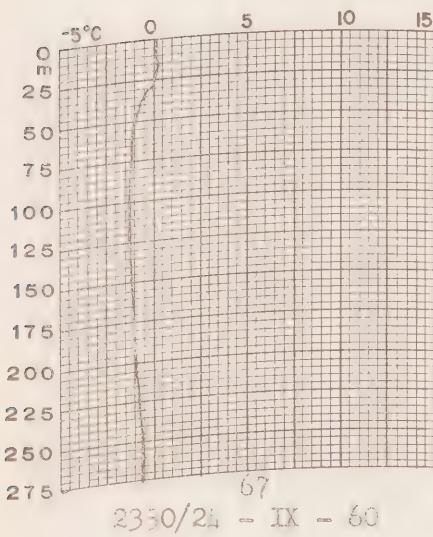
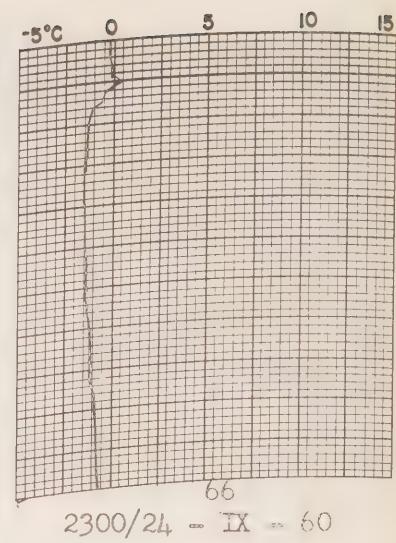
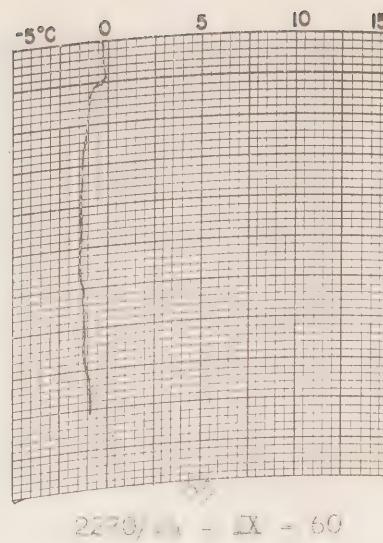
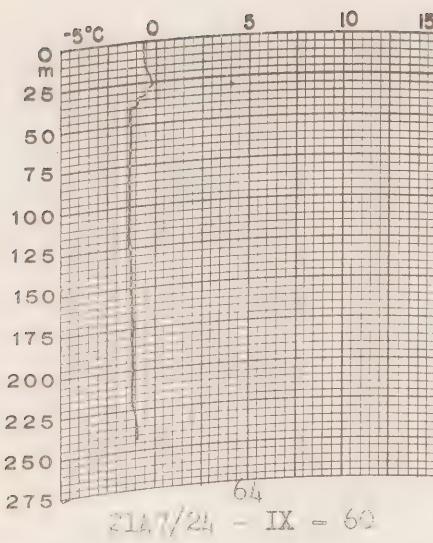












C.C.G.S. "LABRADOR"

Bathythermograms



TABLE 2

Extent of the data obtained in "Labrador".

	<u>Serial Data</u>		<u>Plankton</u>		<u>Bathythermograph</u>		
Stn. No.	Temp.	Sal.	Micro.	Net.	Slide No.	G.M.T.	Date
Test		74° 21.5'N		95° 12.0'W	0	0500	30 VIII-60
1	X	X			1	0600	30
2	X	X			2	0655	30
3	X	X			3	0810	30
4	X	X			4	0925	30
5	X	X			5	1015	30
6	X	X			6	1310	30
7	X	X			7	1354	30
8	X	X			8	1505	30
9	X	X	X		9	1655	30
10	X	X			10	1810	30
11	X	X			11	1920	30
12	X	X	X		12	2035	30
13	X	X			13	2250	30
14	X	X			14	0001	31
15	X	X			15	0515	31
16	X	X			16	0705	31
17	X	X	X		17	0755	31
18	X	X			18	1015	31
19	X	X			19	1145	31
Radstock							
Bay				X			1 IX-60
20	X	X			20	1630	2
21	X	X			21	1755	2
22	X	X			22	1945	2
23	X	X			23	2125	2
24	X	X			24	2320	2
25	X	X		X	25	0545	3
26	X	X	X	X	26	0756	3
27	X	X			27	1115	3
28	X	X			28	1403	3
29	X	X			29	2215	5
30	X	X			30	0001	6
31	X	X			31	0245	6
32	X	X			32	0510	6
33	X	X			33	0759	6
34	X	X			34	1055	6 IX-60
35	X	X			35	1357	6
36	X	X			36	1813	6
37	X	X			37	2155	6
38	X	X			38	2350	6
39	X	X			39	0215	7

Table 2 (cont'd)

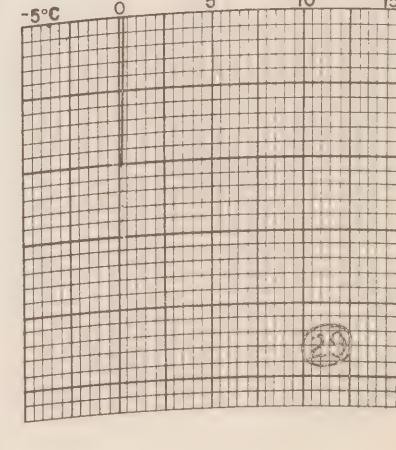
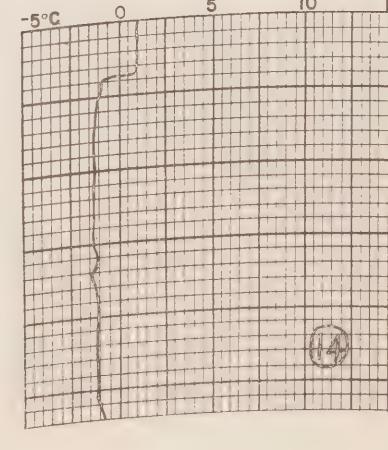
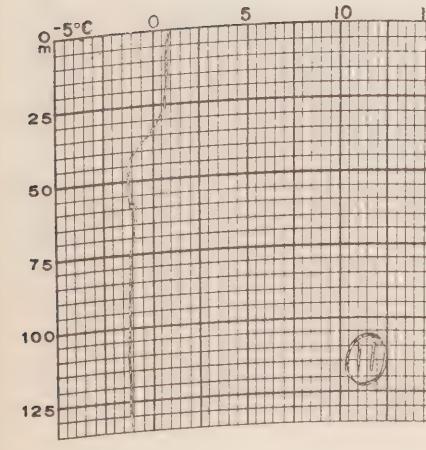
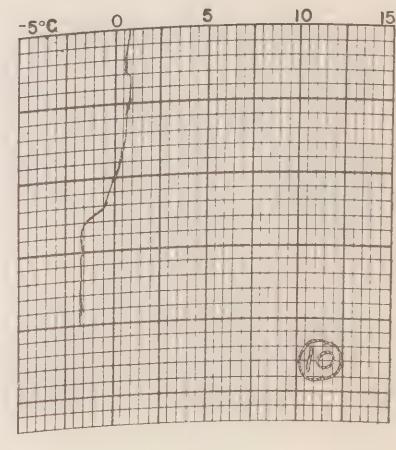
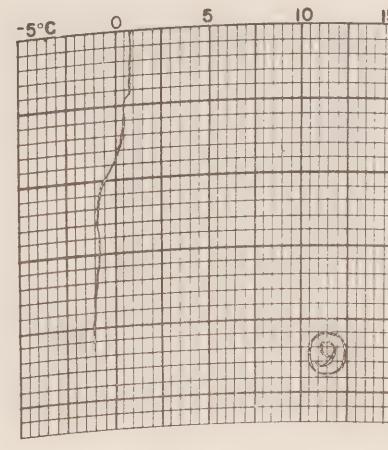
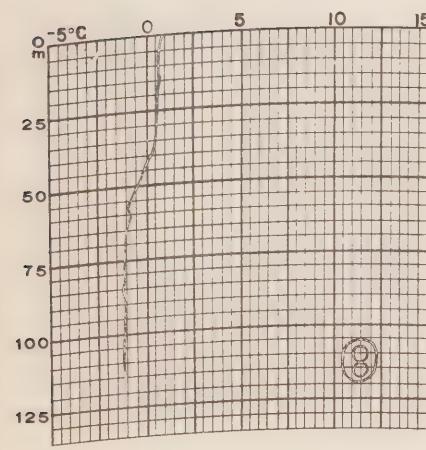
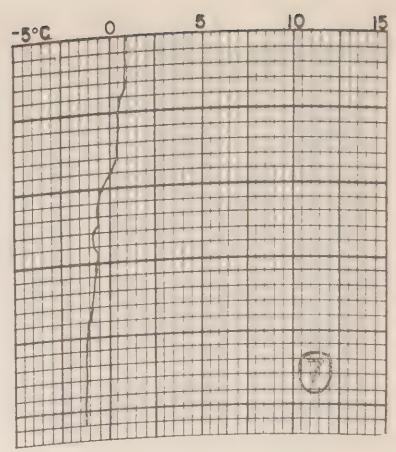
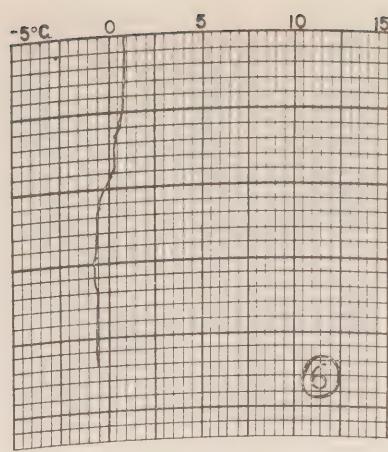
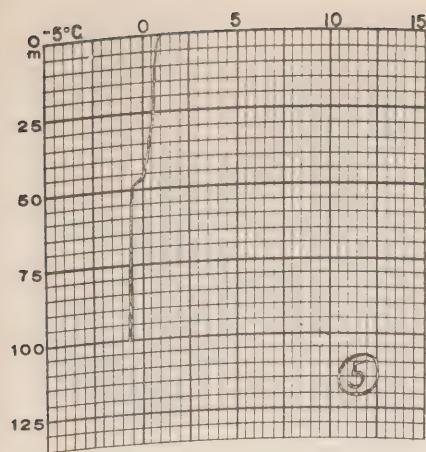
	<u>Serial Data</u>		<u>Plankton</u>		<u>Bathythermograph</u>		
Stn. No.	Temp.	Sal.	Micro.	Net.	Slide No.	G.M.T.	Date
40	X	X			40	0003	7
41	X	X			41	0633	7
42	X	X			42	1230	7
43	X	X			43	2150	7
44	X	X			44	0250	8
45*					45	0015	11
45*					46	0100	11
45*					47	0200	11
45*					48	0310	11
45*					49	0400	11
45*					50	0500	11
45*					51	0600	11
45*					52	0700	11
45*					53	0800	11
45*					54	0900	11
45*					55	1000	11
45*					56	1100	11
45*					57	1200	11
45*					58	1250	11
45*					59	1350	11
45*					60	1450	11
45*					61	1605	11
45*					62	1703	11
45*					63	1823	11
45*					64	1928	11
45*					65	1957	11
45*					66	2100	11
46	X	X		X	67	2325	12
47	X	X			68	0005	13 IX-60
48	X	X			69	1000	15
49	X	X			70	1145	15
50	X	X	X	X	71	1335	15
51	X	X			72	1540	15
52	X	X			73	1200	16
53	X	X			74	1330	16
54	X	X			75	Slide broken	
55	X	X			76	1746	16
56	X	X			77	1905	16
57	X	X			78	0430	17
58	X	X			79	0735	17
59	X	X			80	1030	17
60	X	X			81	1345	17

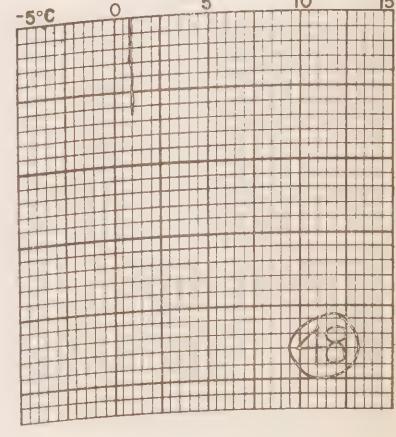
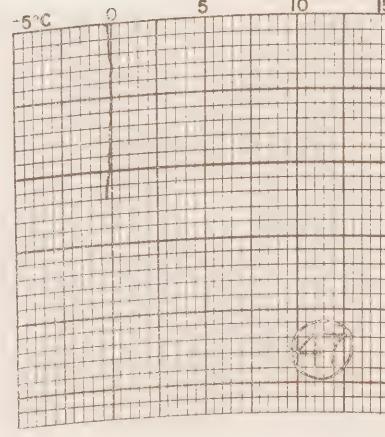
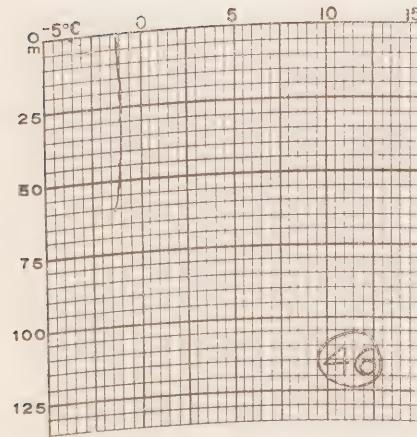
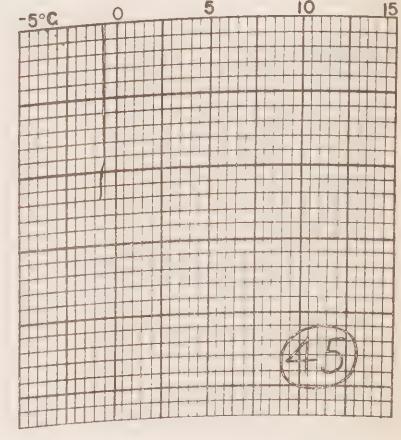
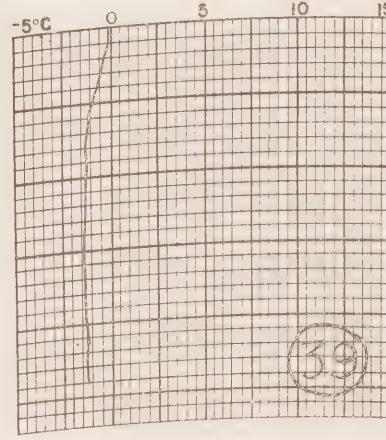
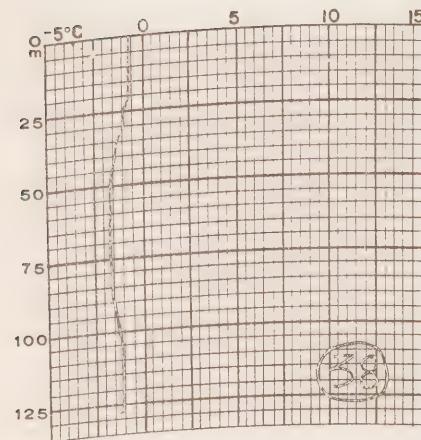
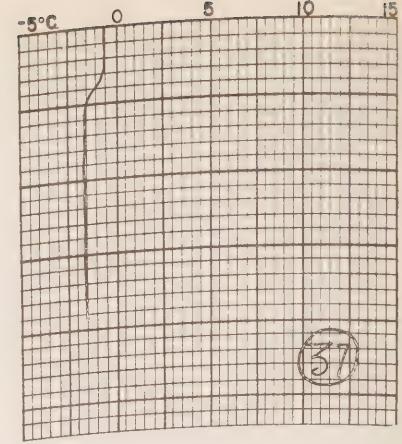
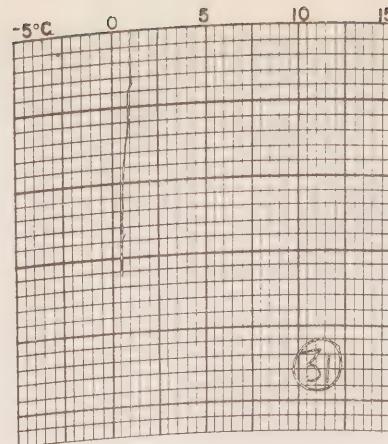
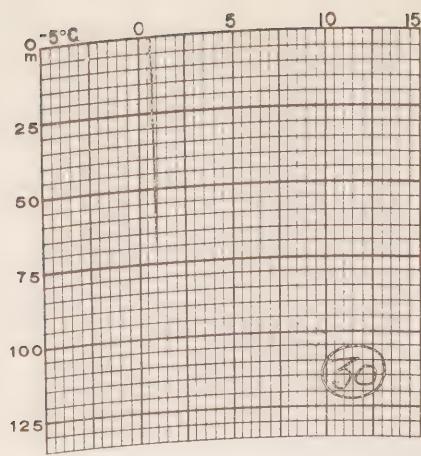
Table 2 (cont'd)

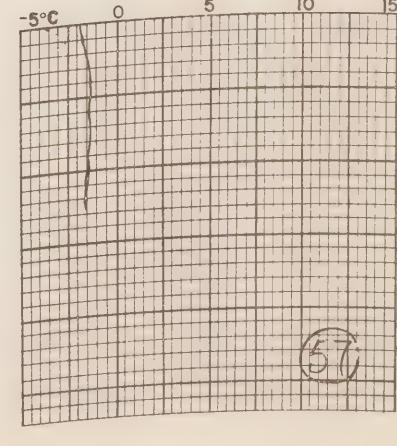
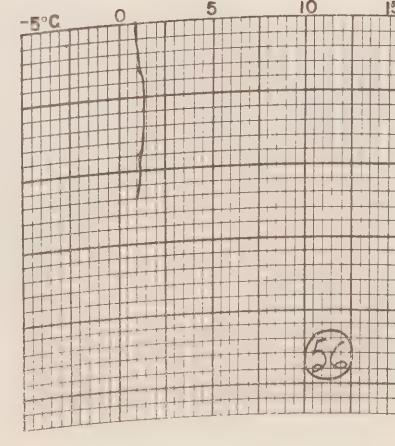
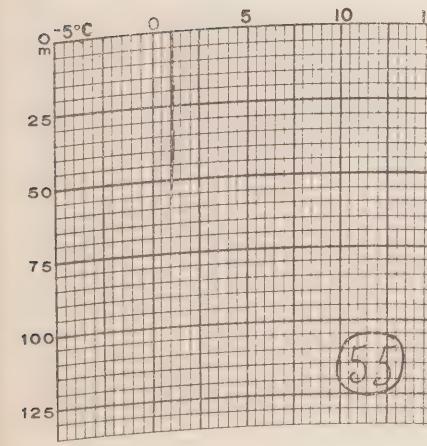
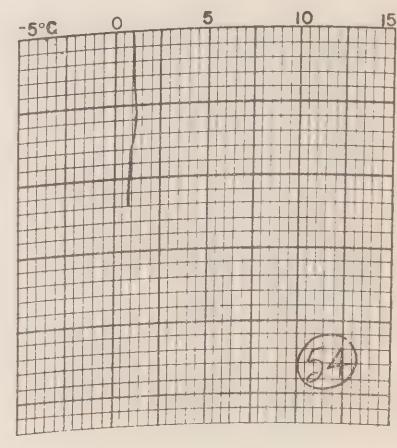
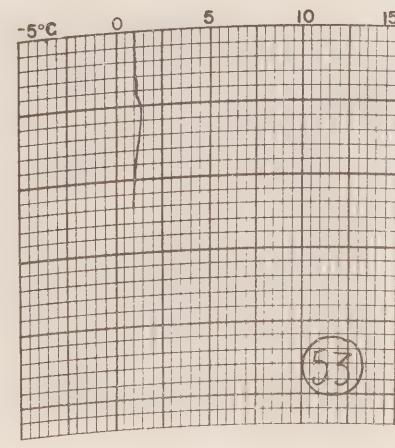
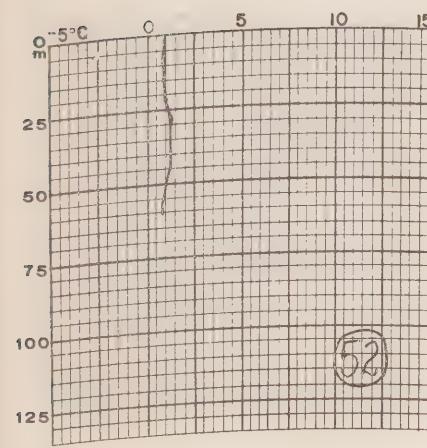
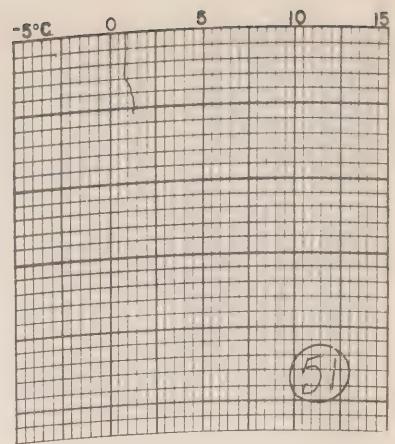
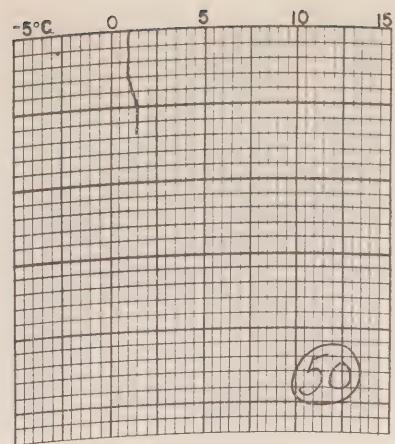
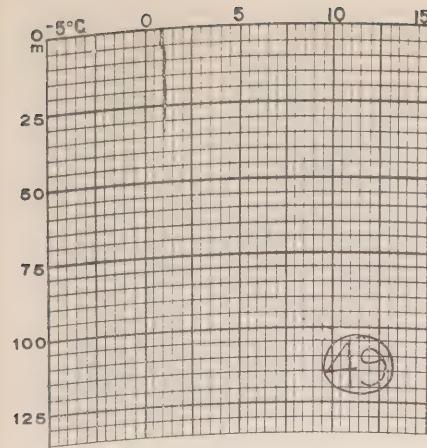
Stn. No.	Serial Data		Plankton		Bathythermograph		
	Temp.	Sal.	Micro.	Net.	Slide No.	G.M.T.	Date
61	X	X			82	2045	17
62	X	X	X	X	83	0235	18
63	X	X	X	X	84	1025	18
64	X	X	X	X	85	1415	18
65	X	X	X	X	86	1854	18
66	X	X			87	2055	18
67	X	X			88	0615	19
68	X	X			89	0825	19
69	X	X			90	1100	19
70	X	X			91	1510	19
71	X	X			92	2310	19
72	X	X			93	0620	20
73	X	X	X	X	94	1200	20
74	X	X	X	X	95	1430	20
75	X	X	X	X	96	1925	20
76	X	X	X	X	97	2345	20
77	X	X	X	X	98	0145	21
78	X	X	X	X	99	0420	21
79	X	X		X	100	0955	21
80	X	X		X	101	1823	21
81	X	X		X	102	2207	21 IX-60
82	X	X		X	103	0123	22
83	X	X		X	104	0825	22
84	X	X		X	105	1255	22
85	X	X			106	0155	23
86	X	X			107	1005	23
87	X	X		X	108	1305	23
88	X	X	X	X	109	2050	23
89	X	X	X	X	110	2355	23
90	X	X			111	1845	25

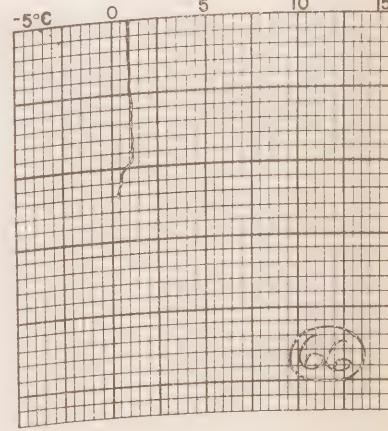
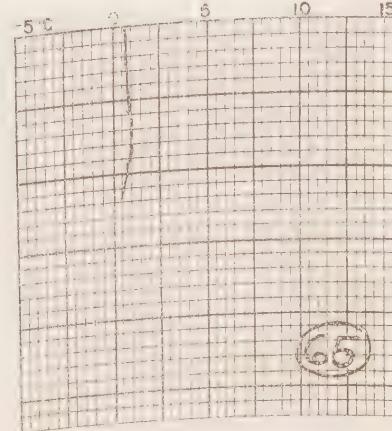
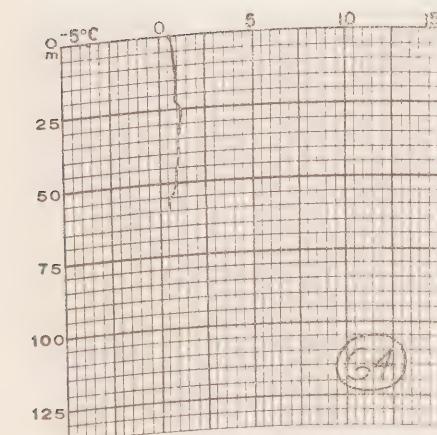
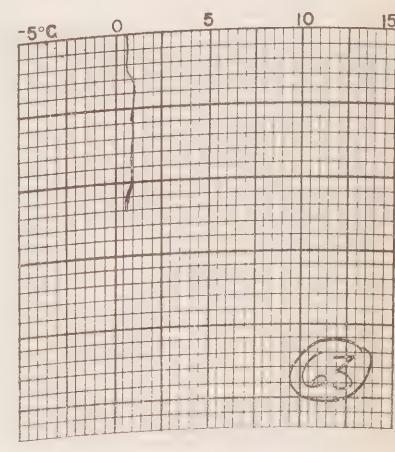
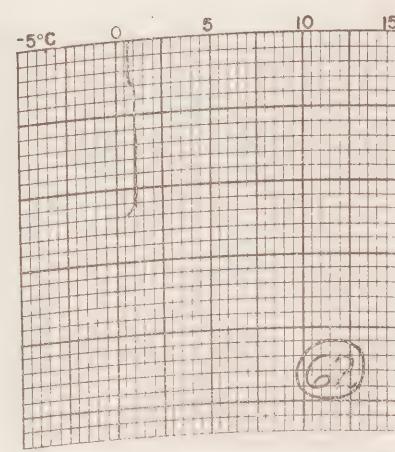
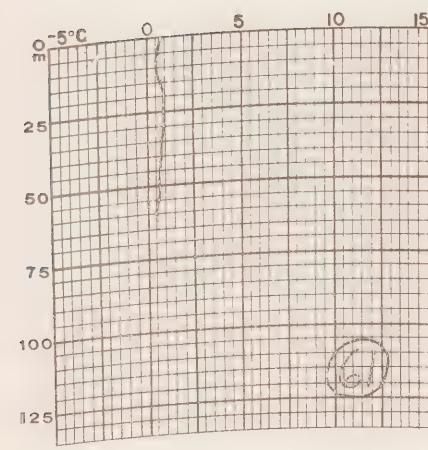
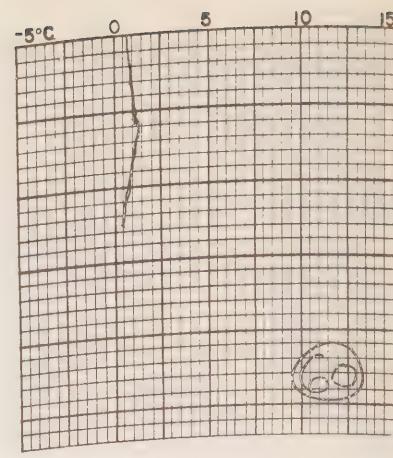
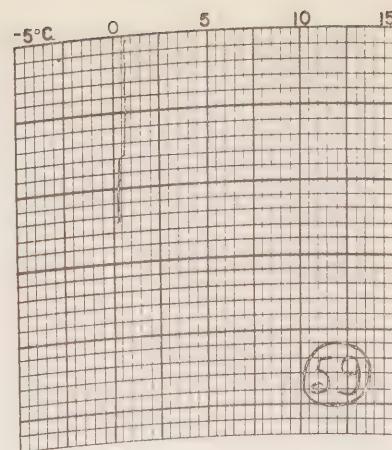
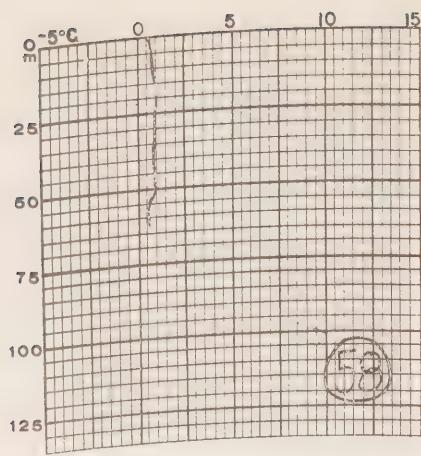
\*Station 45 was occupied in Fury and Hecla Strait in CSS "Baffin".

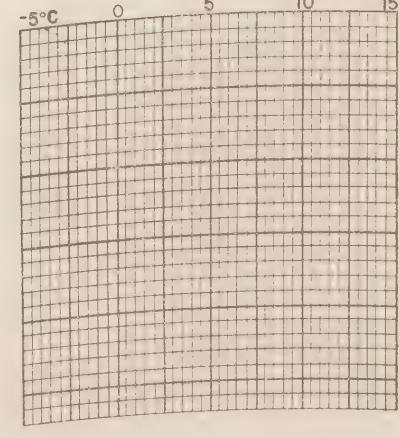
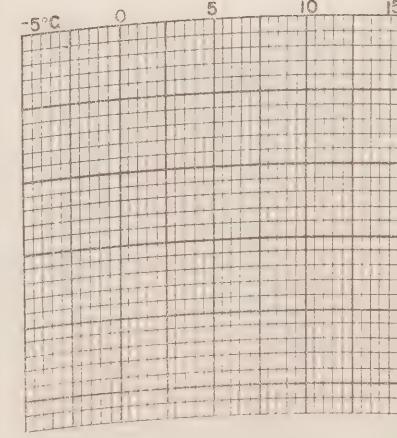
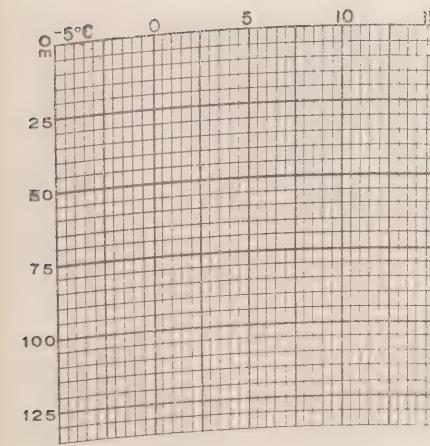
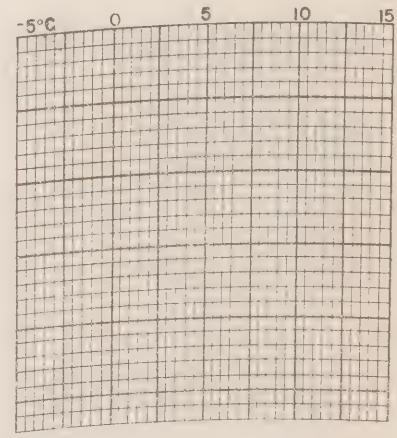
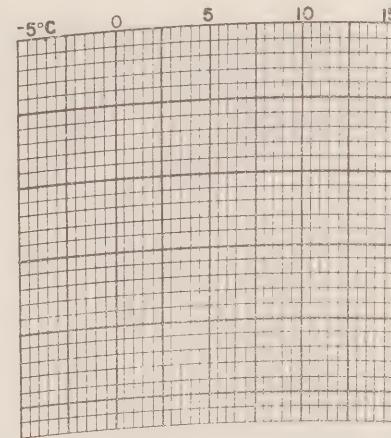
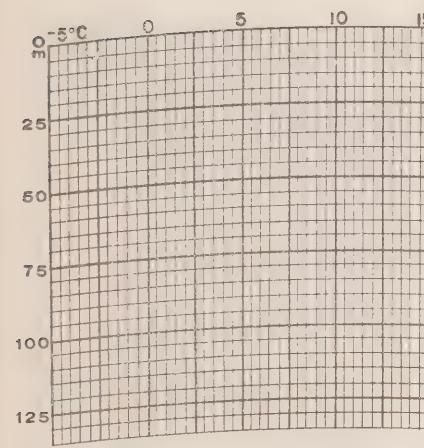
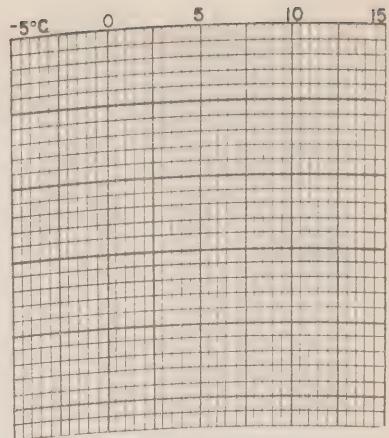
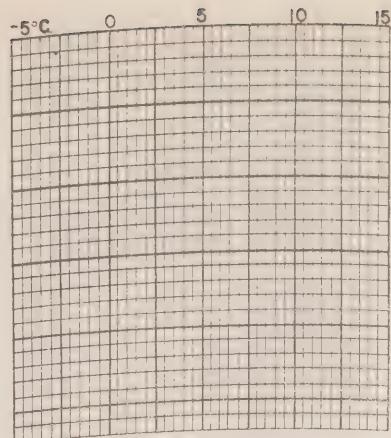
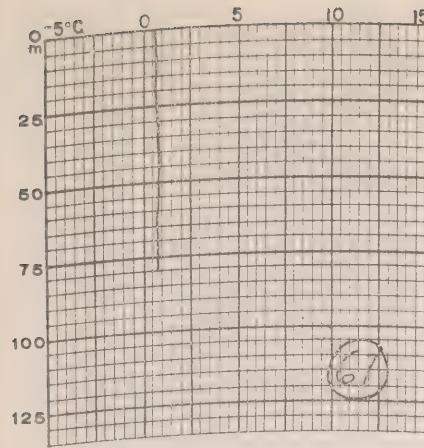


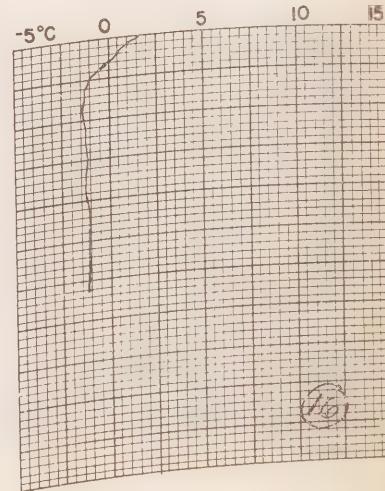
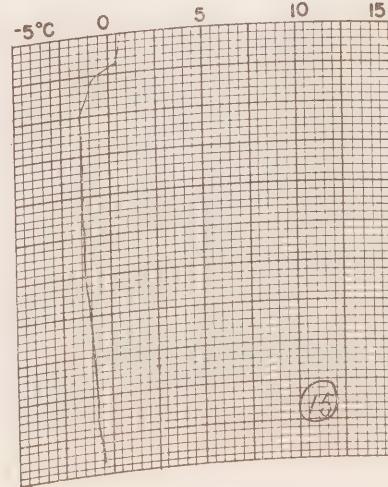
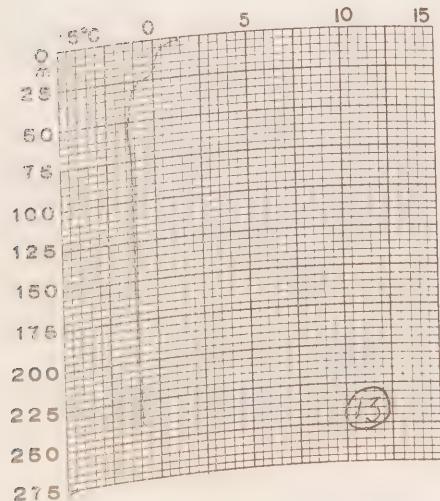
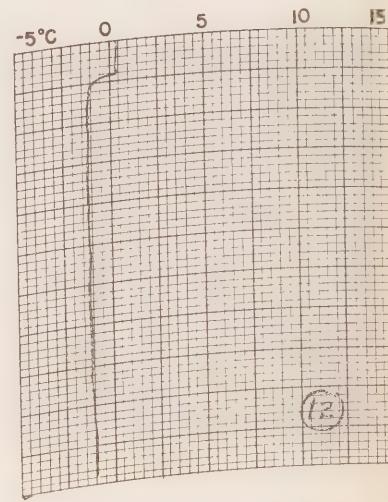
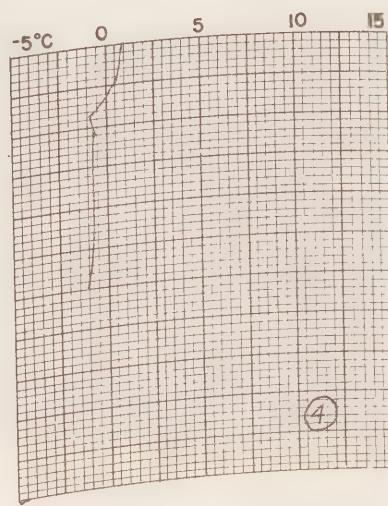
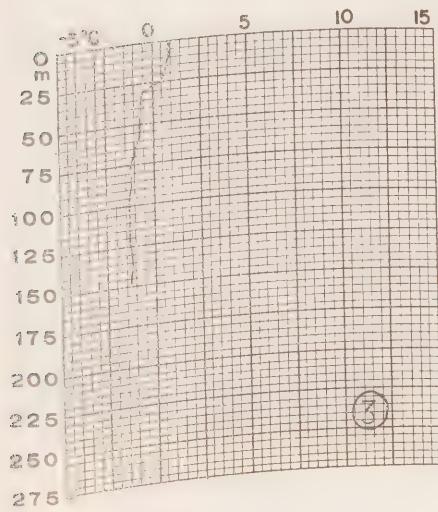
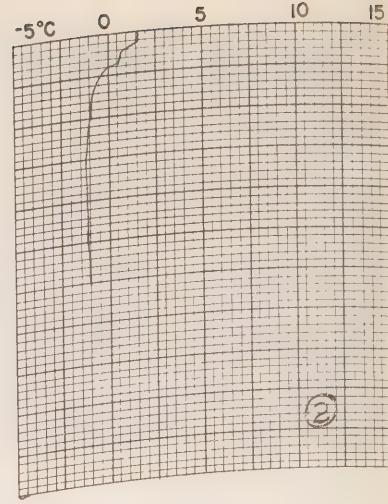
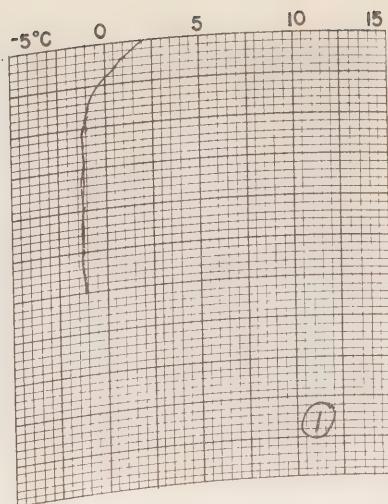
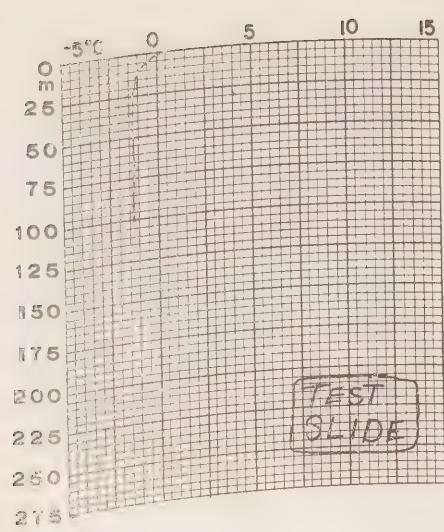


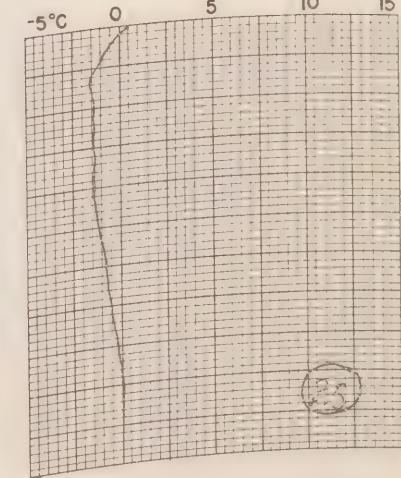
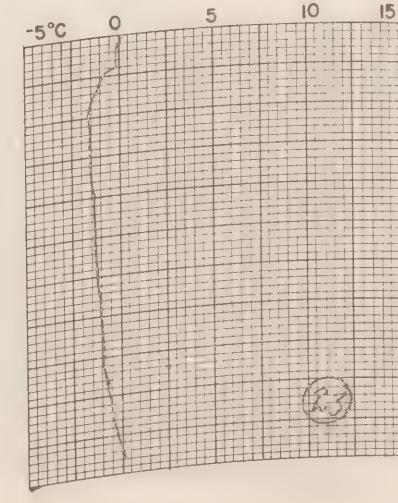
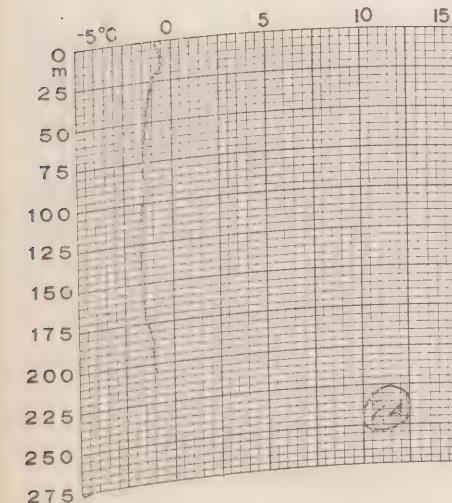
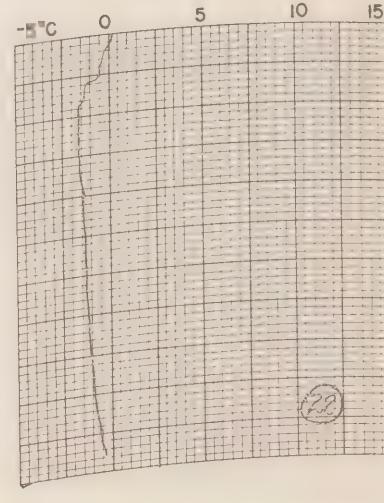
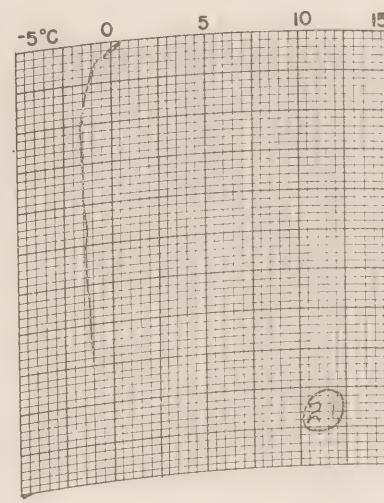
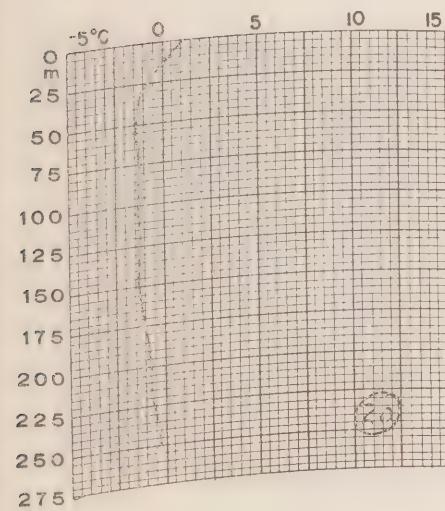
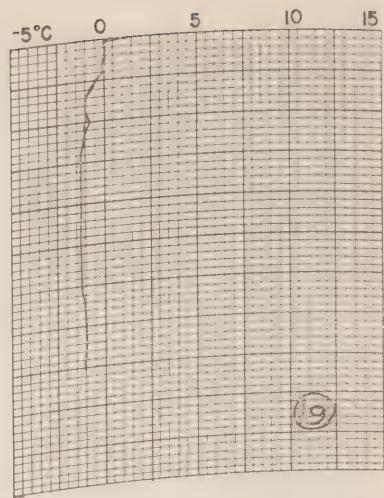
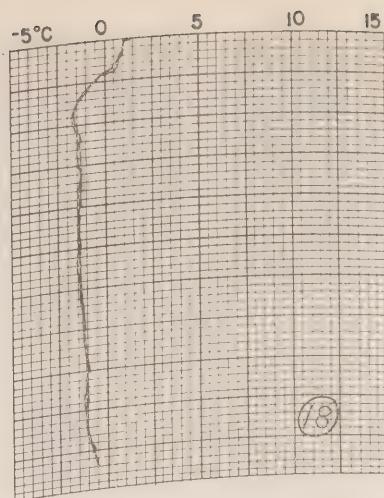
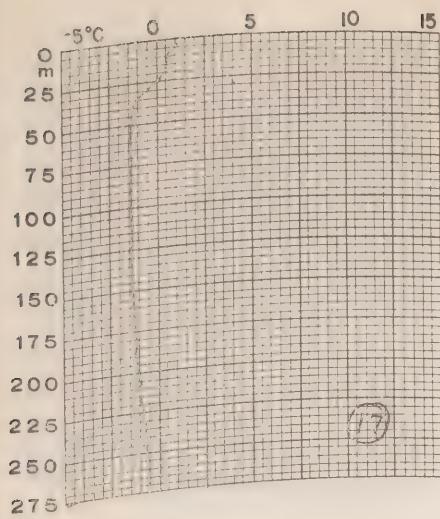


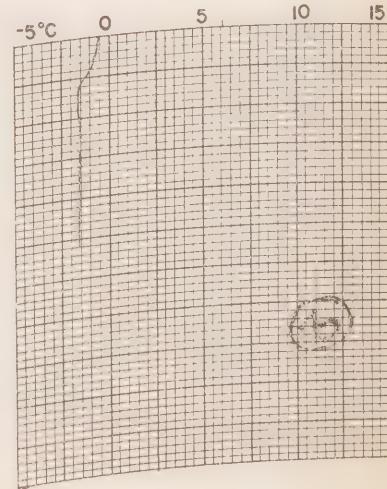
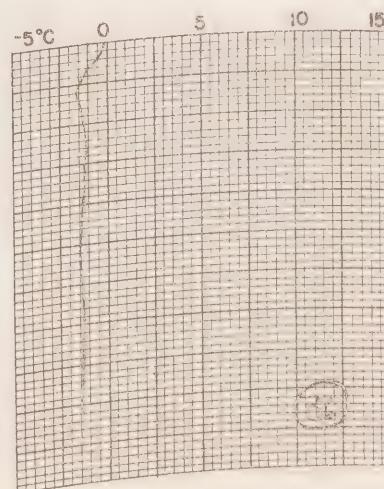
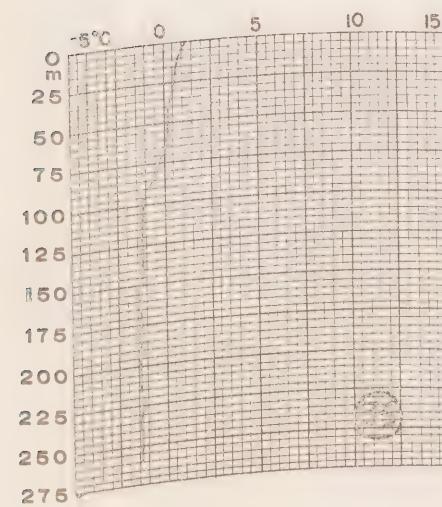
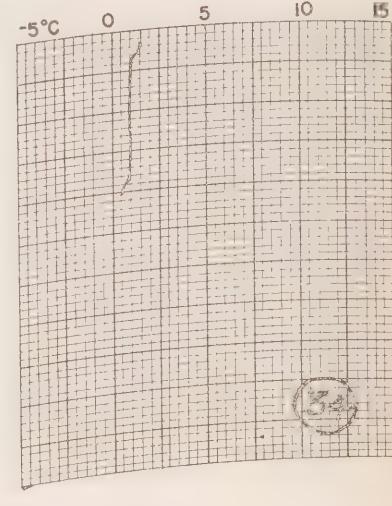
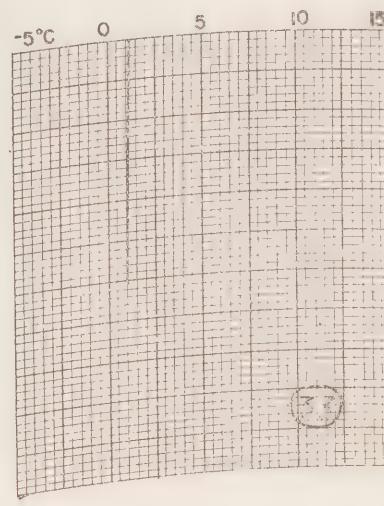
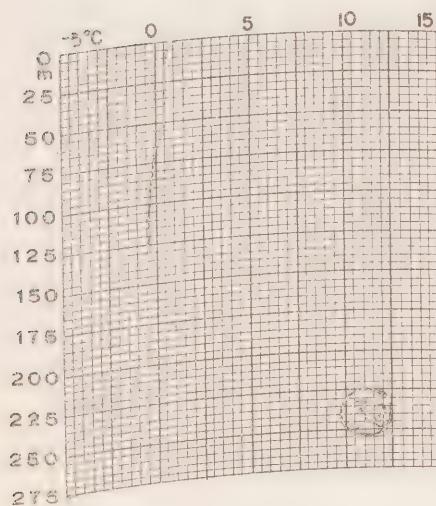
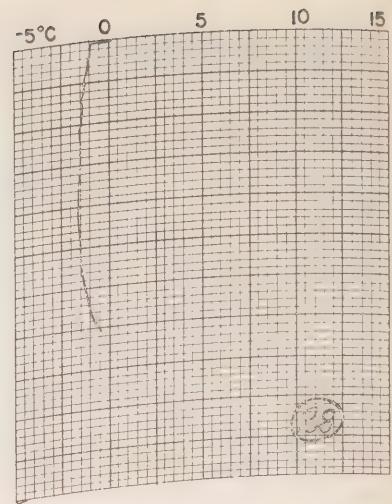
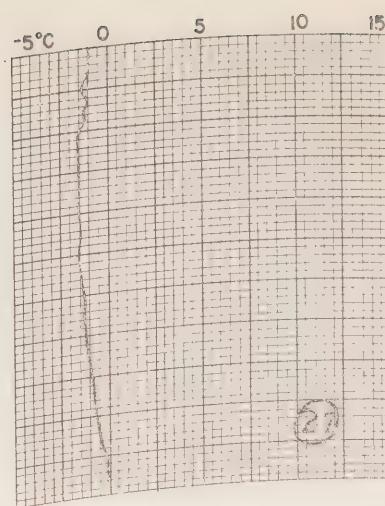
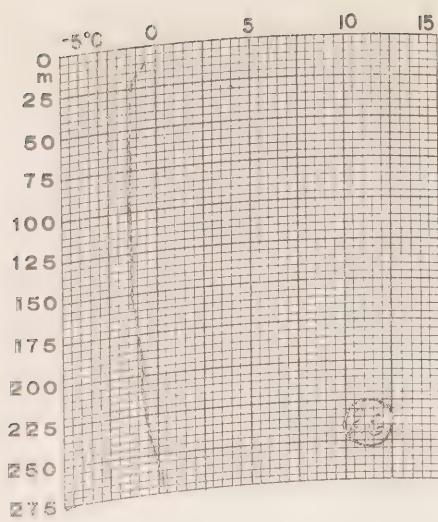


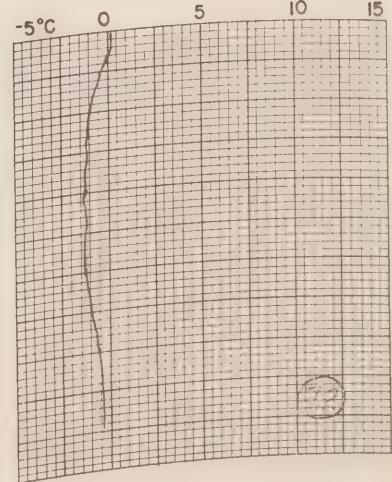
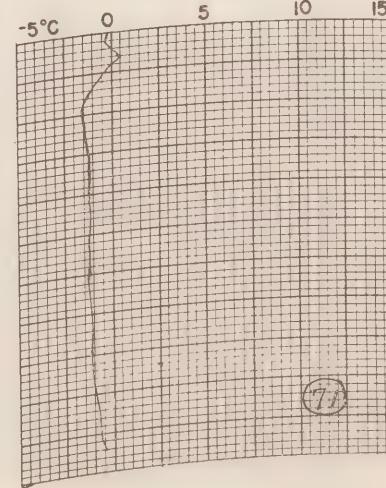
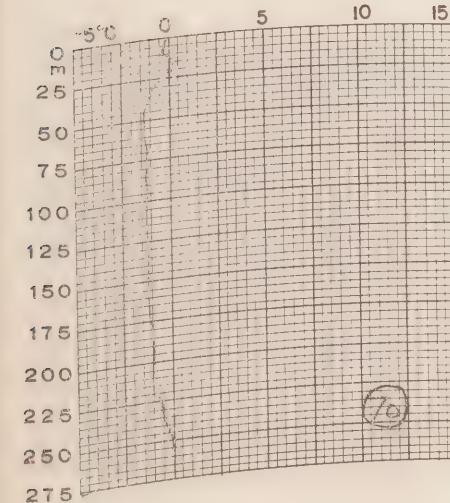
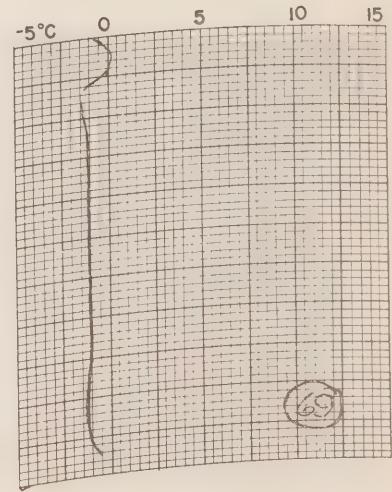
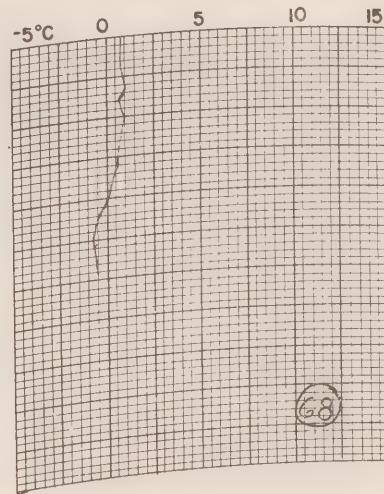
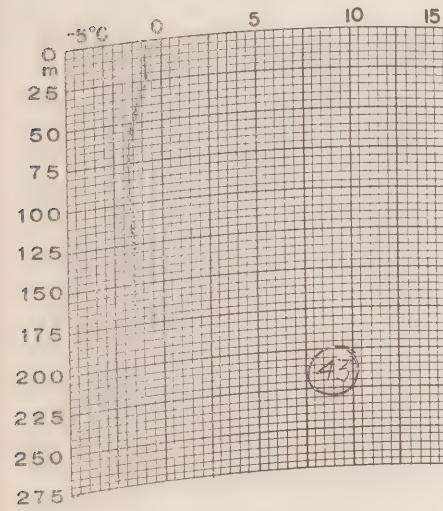
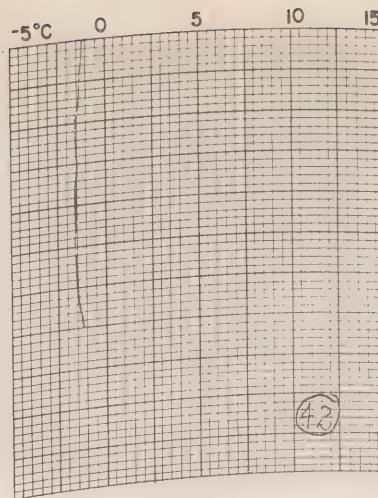
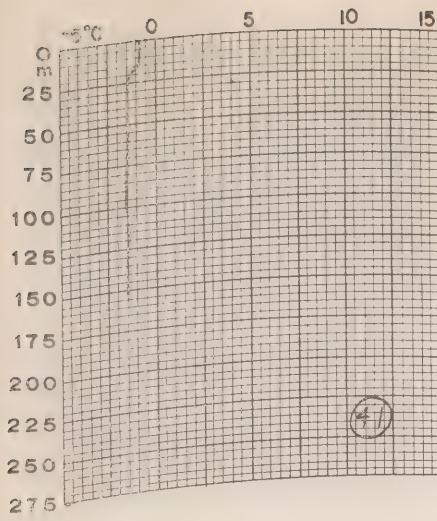


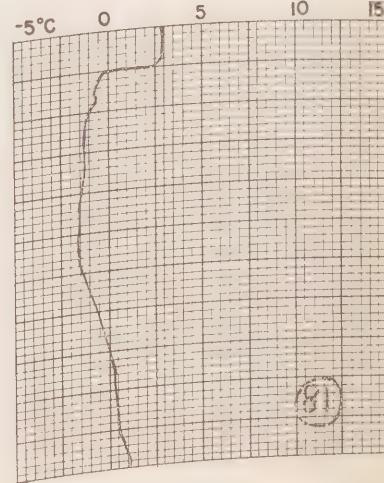
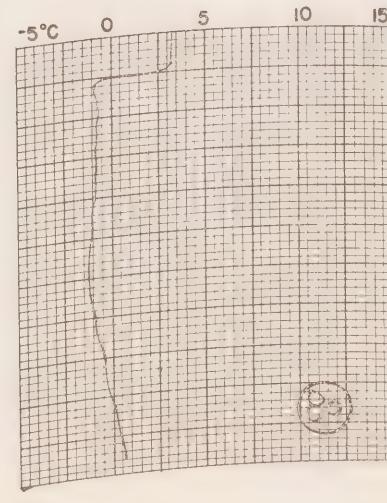
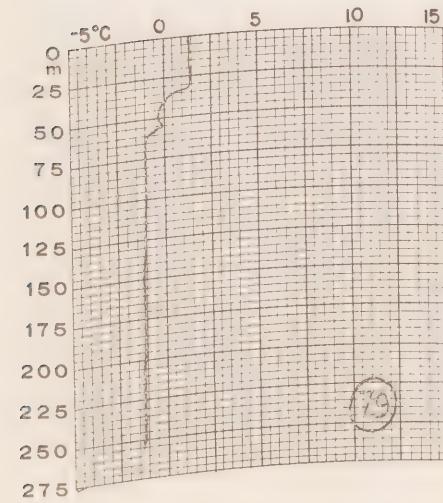
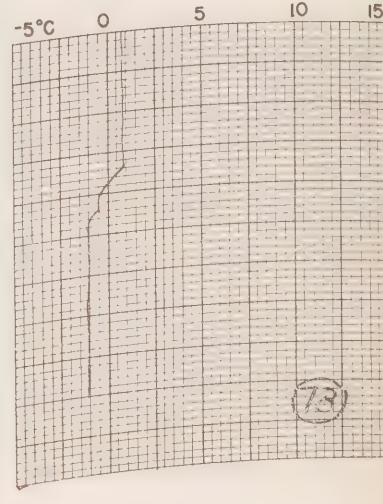
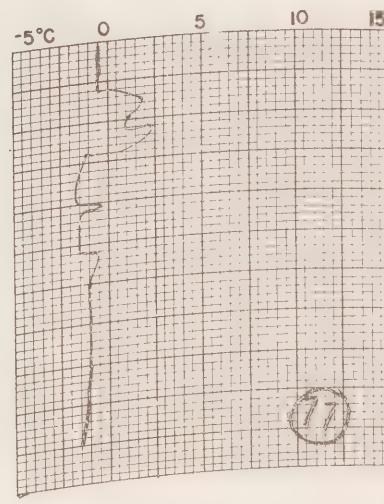
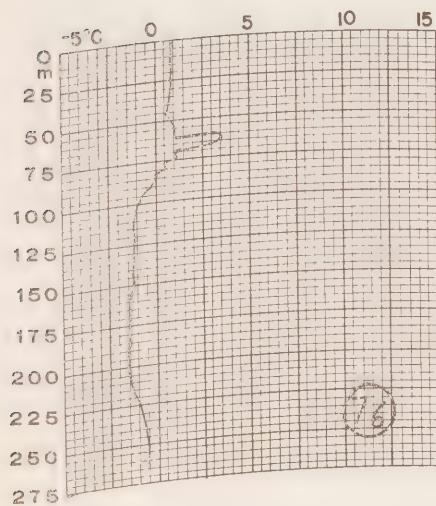
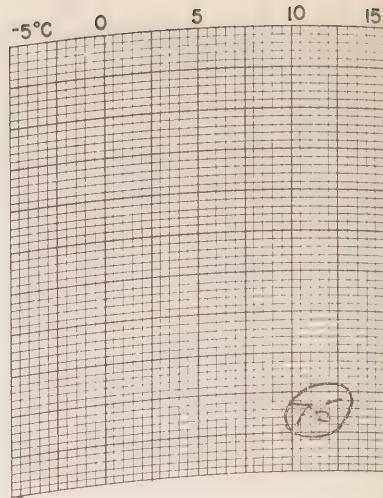
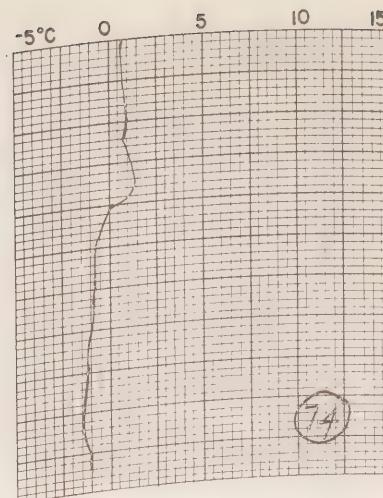
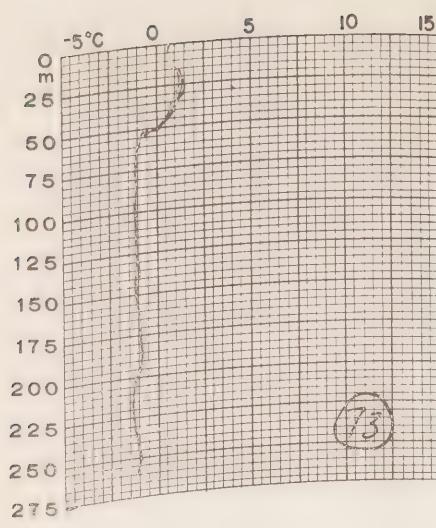


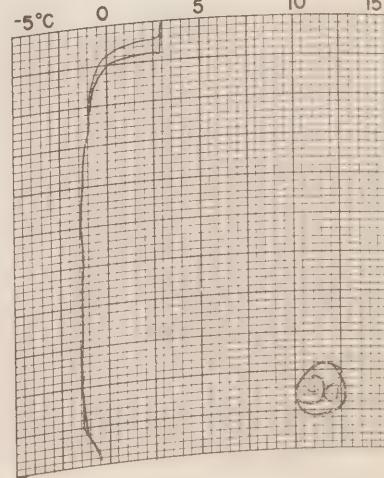
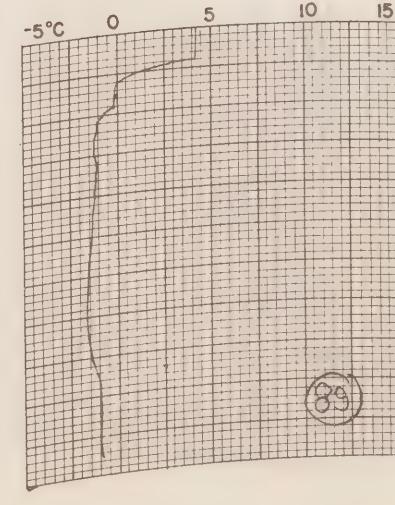
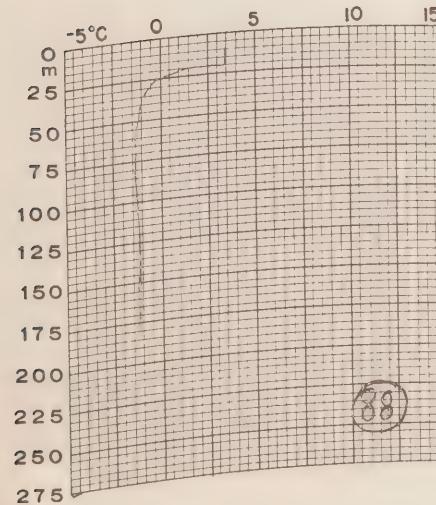
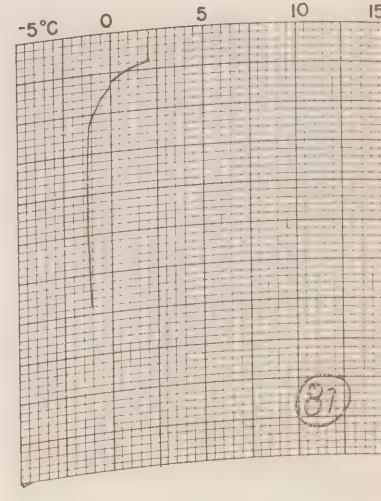
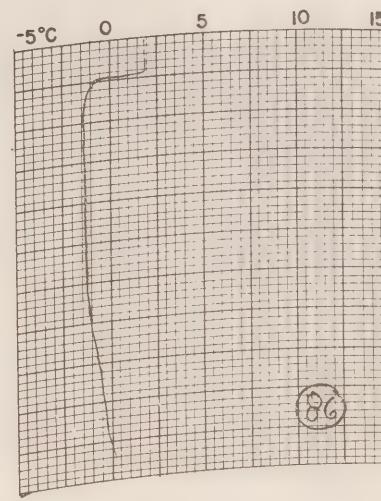
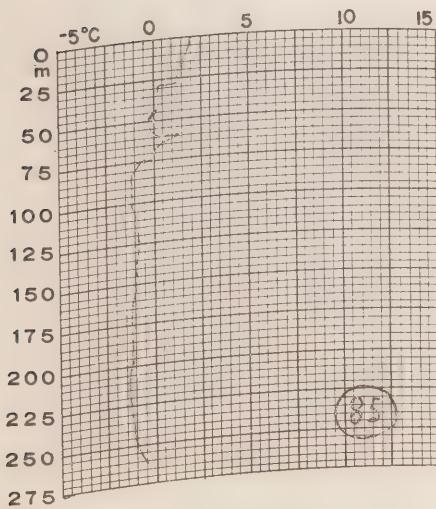
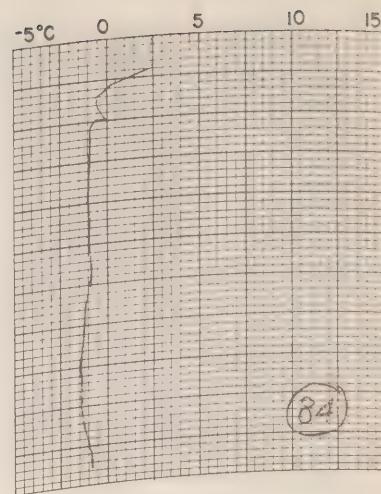
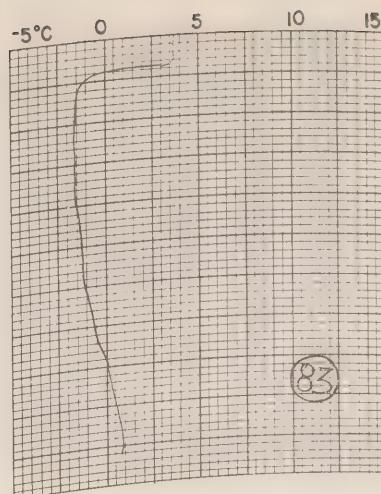
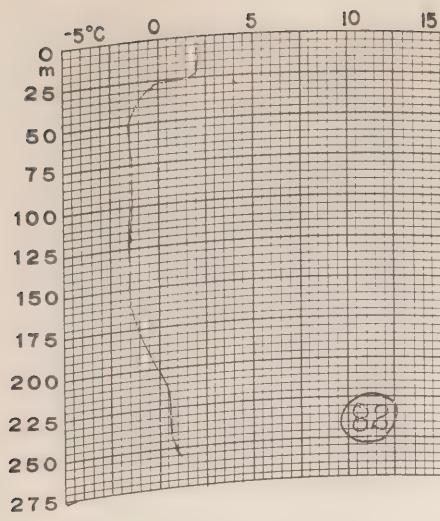




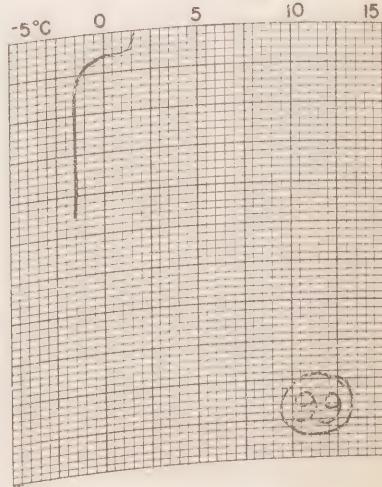
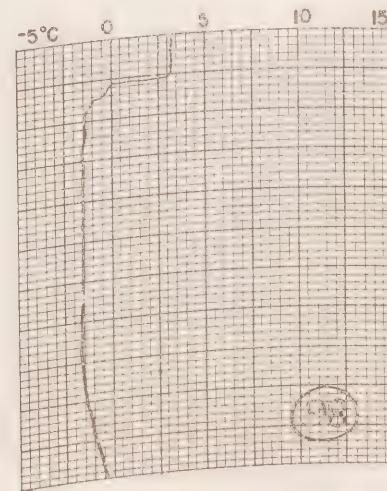
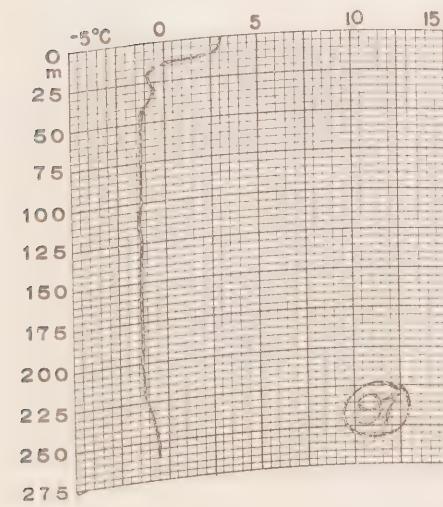
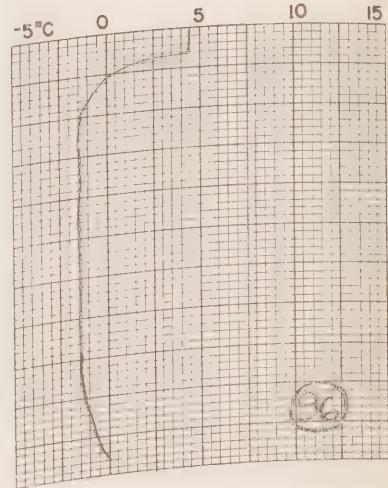
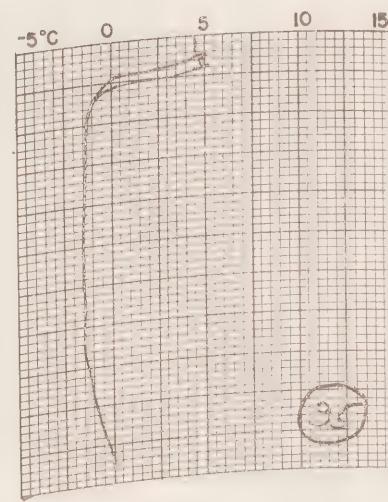
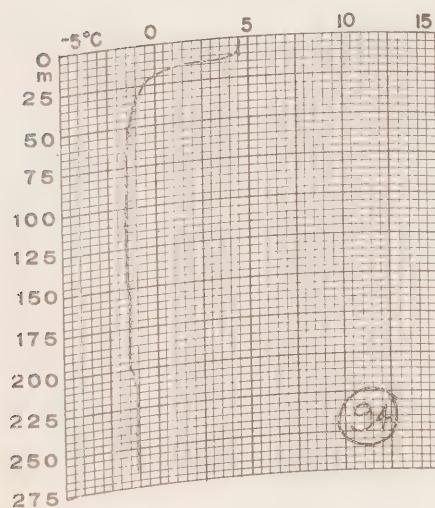
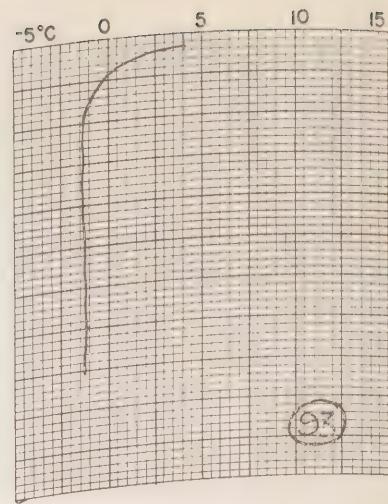
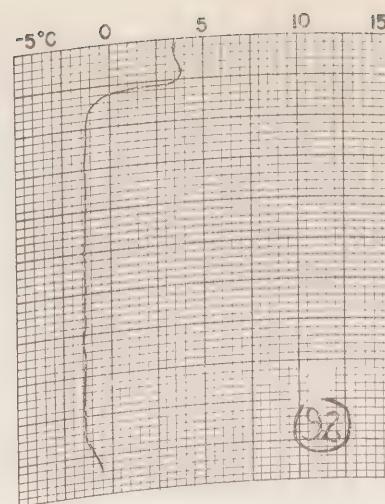
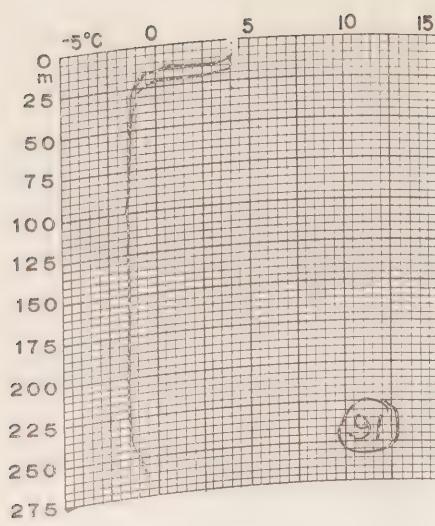


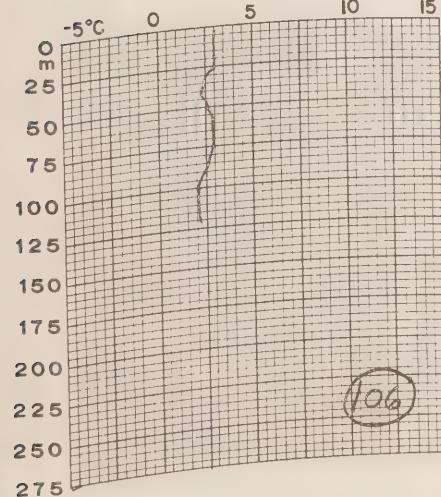
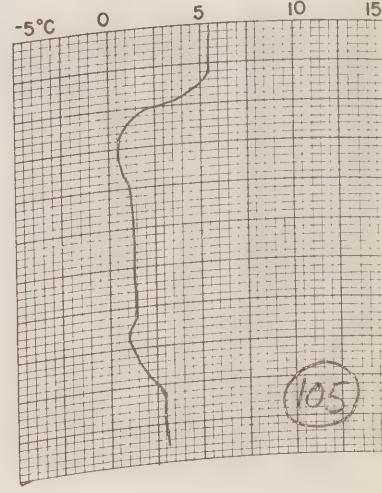
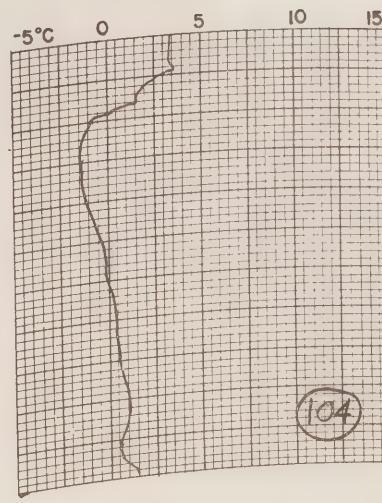
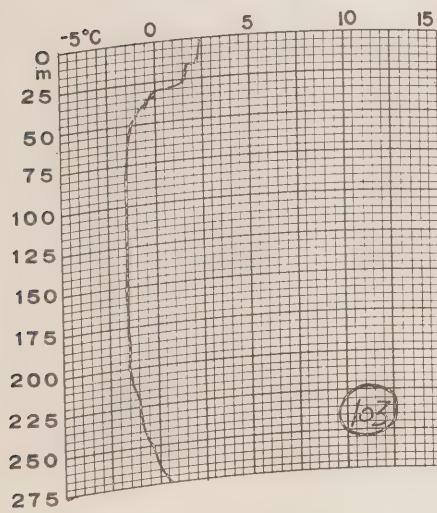
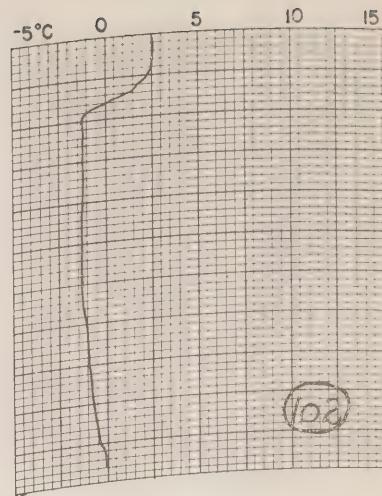
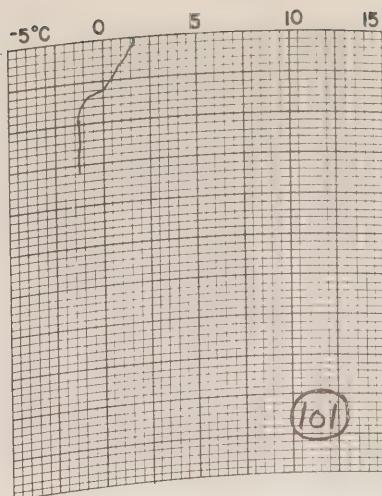
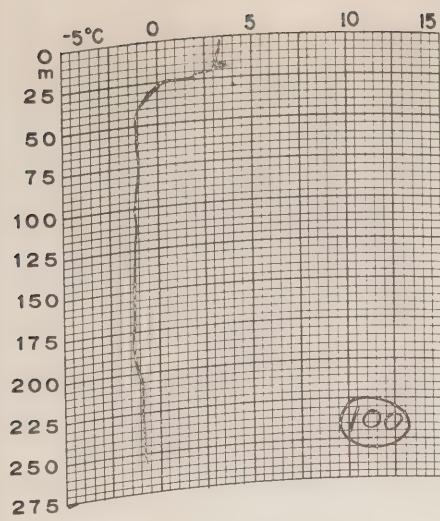






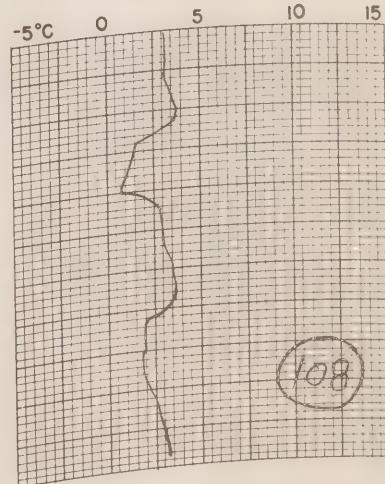
194

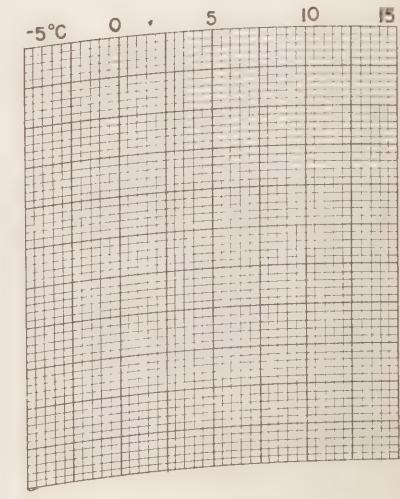
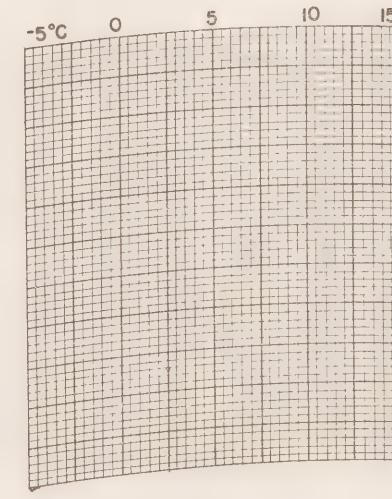
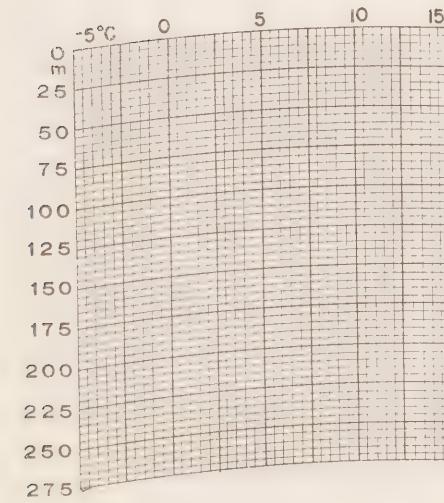
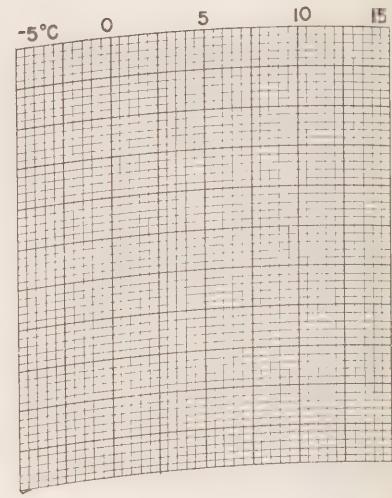
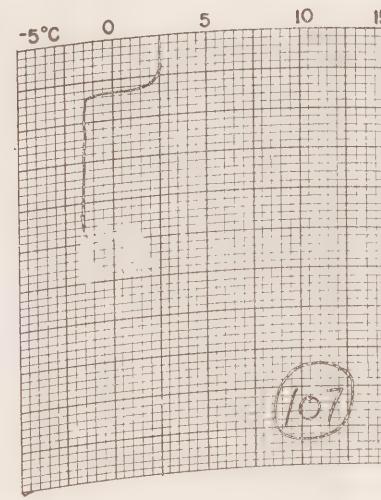
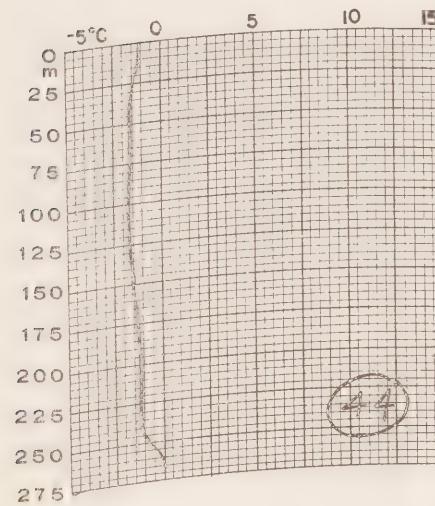
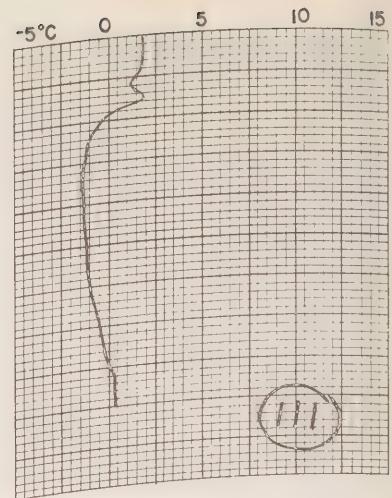
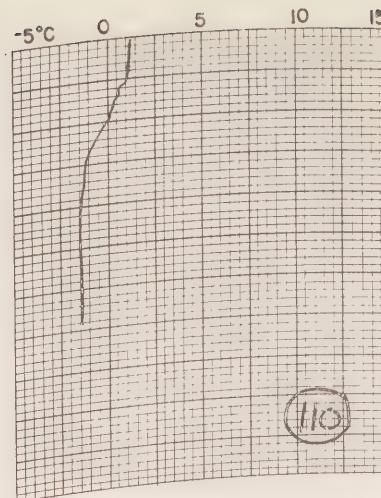
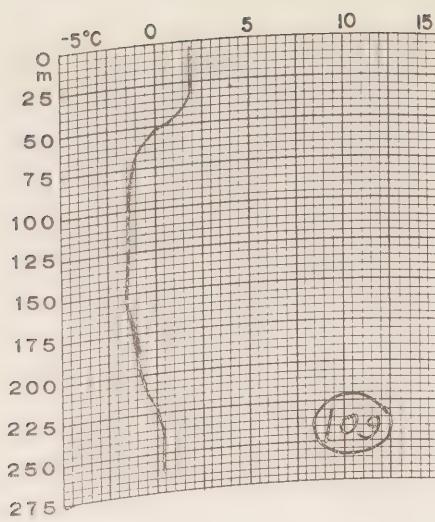




see  
LAST  
PAGE

(107)





## SECTION V

Baffin Current Data



## Current Data - Station 45

Period            September 11 and 12, 1960.

Ship            CSS "Baffin"

Position        69° 56.2'N  
                  84° 15.5'W

Depth            31 fathom

Remarks        Initially the vessel was moored by the head with two anchors, one to port, the other to starboard. At about 2230 GMT September 11, the stern anchor was put down.  
  
Observations were made at 10, 20, 30, and 50 m with an Ekman meter, and at the surface with a drag. The time between messengers for the current meter observations was generally three minutes. The drag was timed over a line length of 30.5m.

### EXPLANATION OF DATA HEADINGS

#### 1. Current Observations

Time (GMT)	Mean time of release of the start and stop messengers or mean time of the drag.
Depth (m)	Depth in metres of the instrument as indicated by a metre wheel.
Speed (cm/sec)	Speed of current in centimeters per second.
Dir. ( $^{\circ}$ T)	The true direction towards which the current was flowing.

#### 2. Wind

Speed (knots)	Speed of wind in knots.
Dir. ( $^{\circ}$ T)	True direction from which the wind was blowing.

<u>Current</u>			<u>Wind</u>		
Time (GMT)	Depth (m)	Speed (cm/sec)	Dir (°T)	Speed (knots)	Dir (°T)
2250-11-IX-60	sfc	19	090	20	270
2314	10	8			
2323	10	9			
2332	10	16			
2342	20	14			
2354	30	18			
0001-12-IX-60	50	5	355		
0010	sfc	27	090	15	270
0030	10	27		15	270
0034	20	29			
0037	30	18			
0044	50	15	045		
0050	sfc	39	090		
0112	10	26			
0129	20	33			
0133	30	32			
0150	50	27	069		
0155	sfc	34	090	15	270
0219	10	25			
0224	20	33			
0229	30	28			
0235	50	26	075		
0240	sfc	27	090		
0310-12-IX-60	sfc	18	090	12	270
0315	10	14			
0323	10	12			
0328	20	30			
0333	30	24			
0339	50	21	075		
0404	sfc	19	090		
0415	10	7			
0420	20	28			
0425	30	14			
0430	50	15	095	12	270

<u>Current</u>			<u>Wind</u>		
Time (GMT)	Depth (m)	Speed (cm/sec)	Dir (° T)	Speed (knots)	Dir (° T)
1133	10	11			
1152	50	19	082	9	270
1156	30	23			
1202	20	33			
1205	10	14			
1229	50	25	091		
1234	30	37			
1237	20	38			
1252	10	20			

<u>Current</u>			<u>Wind</u>		
Time (GMT)	Depth (m)	Speed (cm/sec)	Dir (°T)	Speed (knots)	Dir (°T)
0505	sfc	9	090		
0520	10	2			
0525	20	25			
0530	30	17			
0535	50	11	120		
0610	10	0	-		
0620	20	9			
0624	30	12			
0629	50	1	-		
0633	10	6			
0705	sfc	-	-		
0710	10	11			
0715	20	11			
0722	30	6			
0727	50	5	245		
0800-12-IX-60	sfc	-	-		
0807	10	5			
0813	20	16			
0817	30	14		10	315
0823	50	11	255		
0915	10	8			
0923	20	3			
0929	30	14			
0934	50	6	205		
0950	sfc	12	180		
0958	10	6		10	270
1002	20	7			
1006	30	12			
1010	50	6	165		
1110	10	10			
1115	20	26			
1119	30	23			
1124	50	13	100		

## REFERENCES

Canadian Hydrographic Service, 1960      Tidal and oceanographic survey Hudson Strait, August and September, 1959.

Ekman, V. W., 1908      Die Zusammendrückbarkeit des Meerwassers nebst einigen Warten für Wasser und Quecksilber. Publ. Circ. Cons. Explor. Mer., No. 43, 47 pp.

Ekman, V. W., 1932      An improved type of current meter. J. Conseil Expl. Mer. 7, 3-10.

Farquharson, W. I., and C.D. Sauer, 1960      Tidal and oceanographic survey of a section of Hudson Strait Preliminary Report. MS DM&TS.

Grainger, E.H., 1963      Copepods of the genus "Calanus" as indicators of eastern Canadian waters. Royal Society of Canada. Special Publications No. 5 University of Toronto Press.

Knudsen, Martin, 1901      Hydrographischen Tabellen. Copenhagen, 63 pp.

Rattray, M. Jr., 1962      Interpolation errors and oceanographic sampling. Deep Sea Research. Vol. 9, pp 25 to 37.

Sauer, C.D., and N.P. Fofonoff      Oceans II, a computer program for processing oceanographic data (Publication pending).

Strickland, J.D.H.      MS, 1958. Standard methods of seawater analyses. Volume II. Fish. Res. Bd. Canada, MS Rept. Oceanogr. and Limnol., No. 19, 78 pp.

Strickland, J.D.H., and T.R. Parsons, 1960      A manual of seawater analysis. Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.

Wilson, W.D., 1960      Equation for the speed of sound in seawater. Journ. Acoust. Soc., America 32 (10); p. 1357.





BINDING SECT. OCT 27 1965

GC            Canada. Oceanographic Data  
1            Centre  
C35            Data record series  
1964  
no.15-18

PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

